

PUBLISHED EVERY FRIDAY

AT 33, TOHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE, PARL., LONDON"

Telephone No.: WHITEHALL 9233 (7 lines)

Annual subscription payable in advance and postage free:

British Isles and Abroad £2 5s. od.

Single Copies One Shilling

Registered at the General Post Office, London, as a Newspaper

VOL. 77 No. 23

FRIDAY, DECEMBER 4, 1942

CONTENTS

	PAGE
Editorials	537
Letters to the Editor	542
Publications Received	543
The Scrap Heap	544
Overseas Railway Affairs	545
The German "Austerity" Locomotive	546
Railway Bearing Metals: Their Control and Recovery	547
International Railway Associations—I	549
L.M.S.R. Diesel-Electric Shunting Locomotives—II	551
Personal	555
Transport Services and the War	557
Stock Market and Table	564

DIESEL RAILWAY TRACTION SUPPLEMENT

The December issue of THE RAILWAY GAZETTE Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price 1s.

NOTICE TO SUBSCRIBERS

Consequent on paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list which will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions

POSTING "THE RAILWAY GAZETTE" OVERSEAS
We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE possesses the necessary permit and facilities for such dispatch.

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

REDUCTION IN SIZE OF PAGE

To economise in paper our readers will observe a slight reduction in the size of THE RAILWAY GAZETTE in that the size of the page has been reduced from 9 in. x 12 in. to 8½ in. x 11½ in. The type area of the page remains the same, namely, 7 in. x 10 in., but the surrounding margins have been reduced. This of course detracts from the appearance of the paper, but is one of the exigencies of the war

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:
Mondays to Fridays 9.30 a.m. till 4 p.m.

The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Post-War Commercial Policy

IT is apparent from recent official and semi-official statements that a new phase has been opened in relation to Britain's export trade policy. For a good many months little has been heard of it, and there has been almost a tacit disapproval of such efforts as have been made to bring the question forward. Last week, however, there were a number of pronouncements on the subject. Mr. Harcourt Johnstone, Parliamentary Secretary to the Department of Overseas Trade, announced in the House of Commons on November 25 that the Government had been actively engaged on a comprehensive study of post-war economic and commercial policy, and that the special problems of our export trade had been under detailed investigation since December, 1941, by a committee of business men and officials under his chairmanship. Sir George Schuster, M.P., also on that day, dealt with post-war problems in an address to the Industrial Co-partnership Association, and declared his opinion that industry should organise itself into groups so that the Government could have a manageable number of points of contact, by means of which broad guiding directions could be given, although industrial leaders should be left to settle detailed methods of execution. The Association of British Chambers of Commerce, in a letter to Mr. Eden, the Foreign Secretary, urged that the combined Foreign Office service to be formed after the war should be composed of an astute body of commercial negotiators, and went on to say that candidates for this service should be as well selected and trained as the personnel of trading concerns; they will have a far greater power for the advantage or disadvantage of British trade in general than can be given to the representatives of British firms. *The Times* of November 26 announced that industry is to have a joint committee, consisting of representatives of the British Confederation of Employers, the Federation of British Industries, and the Trades Union Congress, to consult with Sir William Jowitt, the Paymaster-General, on the post-war reconstruction problems which he is studying. The purpose of the joint committee would be to bring the collective views of individualists, both employers and workers, to bear on the Minister's inquiry before policy is shaped.

Initiative in Industry

There can be no doubt of the urgent need for this country to be able to face the transitional period after the war with a sufficient measure of agreement between the various sections of industry to enable them readily to adapt plans to meet the circumstances which will then arise. In existing conditions obviously it is not possible to evolve hard and fast schemes to be put into operation when that time comes; but it is both possible and necessary to study conditions in industry as they are today, to reach broad lines of agreement, and to arrive tentatively at least at a policy which would be capable of adjustment to meet varying factors. It is satisfactory to know that in certain important sections of British industry there is a full recognition of this and that measures are already being taken to initiate discussions on these lines. Of the need for a well-planned, boldly conceived, and energetically pursued export policy in this country, there can be no doubt. It is equally essential that it should be based on long-term considerations. The days are long past when British manufacturers, no matter how excellent their products, can hope to secure and maintain overseas markets unless their production efforts are backed by a sales organisation as good as, or better than, that at the disposal of their competitors.

Christmas Travel Restrictions

The Minister of War Transport has now announced that limitations on railway passenger services during the Christmas period will begin a day earlier this year than a year ago, and will end a day later; that is to say, they will come into operation on December 21, and remain in being until December 29. This step has been taken because the pressure on the railways for essential purposes makes it necessary to avoid the running of extra trains before and after the holiday weekend. The directions that have been issued to the railway companies are that no more trains are to be run on any weekday between December 21 and 29 inclusive than on an ordinary weekday in December this year. Similarly, on December 27, there will be no more trains than on an ordinary Sunday in December. Trains may continue to run in parts, but each part will count as a single train. There will be no special facilities for travel by road. The days of travel to and from leave by the Services have been adjusted so that the usual number of Service personnel may be at home on Christmas Day. Vouchers for visits to evacuees will not be available during the period of limitation of services, nor will free or assisted travel on leave by civilian staff of Government Departments or by transferred Civil Defence personnel. An additional reason for avoiding unnecessary travel this year is that

since last Christmas road transport has been further reduced to save rubber and fuel and this has had the effect of throwing a heavy additional burden on the railways.

Road Transport Pooling in Eire

A new scheme of goods transport by road to places in North Mayo not served by rail will come into operation on December 7 with the town of Ballina as the centre. Some details are given at page 557. There are wide areas in Mayo where there is no railway, and at present these are served by both railway-owned lorries operating from Ballina railhead, and also by private hauliers. By the extension of the Great Southern Railways road transport services and the setting up of depots for the collection and distribution of goods, the present system of services by private vans and lorries generally will cease, and the work now performed by these vehicles will be undertaken by the G.S.R. as far as possible. The new system is being introduced because of the unsatisfactory distribution of essential commodities in many areas, which was attributable to some extent to travelling shops and merchants generally reducing their areas of operation in consequence of reduced petrol allocations. There was also a wasteful duplication of services in some districts, while others were inadequately served. It is hoped that the new arrangement will provide adequate and satisfactory transport, and that a very substantial reduction in the consumption of petrol, and in the wear and tear of tyres and lorries, will be effected. If the new scheme succeeds, similar arrangements will probably be applied throughout Eire.

Double Tracking in Roumania

Very substantial railway developments are reported from time to time from Roumania, and it is clear that, despite the cession of Northern Transylvania to Hungary, the country's transport is being improved to strengthen the supply lines to Germany. Double tracking of main lines has been proceeding for some time, and, with the completion on August 1 of the second track on the Marasesti-Buzeu section, Roumanian double-track railway lines now total a route length of 467 km. (290 miles), made up as follows :-

Bucharest—Ploesti Sud—Adjud	...	...	244 km. (151 miles)
Marasesti—Tecuci	...	...	19 km. (12 miles)
Bucharest—Brashov	...	...	111 km. (69 miles)
Cucuteni—Jassy	...	...	14 km. (9 miles)
Teiuș—Tunel (on the Brashov—Cluj line)	...	...	79 km. (49 miles)
467 km. (290 miles)			

The double track extends from Tunel as far as Cluj, an additional 23 km. (14 miles), but that section is now in Hungarian-occupied Transylvania; Tunel is the Roumanian frontier station, and Apahida, 11 km. (7 miles) away, is the Hungarian frontier station. Work is said to be progressing apace on the Bucharest-Urziceni-Faurei (near Buzeu) standard-gauge line which is destined to shorten communication between the capital and Galatz, and at the same time relieve the heavily worked Bucharest-Ploesti-Buzeu main line. The new line will join the present Galatz main line at Faurei, 40 km. (25 miles) to the east of Buzeu. Construction is also in hand on the new Bucharest-Videle-Rosiorii-Caracal-Craiova main line.

Railway Bearing Metals

The metallurgical considerations governing the selection, control, and recovery of bearing metals for railway rolling stock was the subject of an important paper read recently before the Institute of Metals, and on another page of this issue there appears an extensive abstract of the paper prepared by one of the authors. Papers of this type are all too infrequently submitted for open discussion, and on the rare occasions on which that occurs it is to be regretted that the authors almost inevitably have to choose between an audience that is either mainly metallurgical or else primarily composed of engineers. Thus the very desirable interchange of ideas and experience between those concerned with design and material respectively cannot and does not take place. Consequently, it is too often the case that a certain lack of collaboration exists between the parties concerned, with the result that good materials fail because of unsuitable design, or, on the other hand, design is hampered by the employment of incorrect materials. The importance of bonding was discussed at some length, and the authors, though in favour of thin linings to give good bonding and fatigue properties, nevertheless quoted interesting examples to show that good bonding by no means always has been considered as essential. It has been found possible to bring a considerable amount of metallurgical evidence in favour of lead-base bearing metals, the resistance of which to creep under load is superior to medium tin-base alloys. At present the methods employed in the recovery and renovation of bearing metals are of no less import-

ance than the first choice of the materials used, and the second half of the paper was devoted to these aspects of the question, with special reference to a process invented by one of the authors for recovering the large quantity of mixed borings that arise as the result of machining operations in railway workshops. The use of recirculated or recovered metal is obviously a point of economic importance, never more so than at present, but it can lead to serious pitfalls if process control is inadequate.

American Aid for Mexican Railways

On a number of occasions in the past two years reference has been made in our columns to the substantial contracts for locomotives and rolling stock which the National Railways of Mexico have placed with manufacturers in the United States of America. As might be expected, in view of the geographical and strategical ties between the two countries, the United States is playing a considerable part in the rehabilitation of the railways in Mexico. A year ago we recorded that the President of Mexico had put the need for investment in the physical property of the railways at some 200,000,000 pesos (about £8,000,000) and that it would be necessary to spend this within the coming five years. Of the total of 1,000 locomotives, over 300 were over 30 years old and it would be necessary to relay 3,300 kilometres of track with new rails and heavier sections. At that time 1,000 covered wagons were being made in the United States, and arrangements were being made for the purchase of 50 locomotives. The Government decided to guarantee expenditure up to 200,000,000 pesos for the rehabilitation of the railways, including the national strategic Tehuantepec. Now, as recorded in our last week's issue, the United States has agreed to finance the rehabilitation of certain key lines of the Mexican National Railways, and a technical mission of American experts has gone to Mexico to undertake the task. In present circumstances, the Mexican Railways are being called on to carry a much increased traffic burden in the form of strategic materials, and it is to aid in the more efficient carrying of these that the United States is granting assistance.

German War Locomotives

Simplification in the interests of speedier construction and saving of materials has recently been imposed upon the German locomotive-building industry, since the production of locomotives and rolling stock was placed under the control of the Minister for Armaments & Munitions (*Minister für Bewaffnung und Munition*) in March last. The first step under the new direction was the design of what has become known as the "transition locomotive," a type which is being built by the German locomotive works up to the end of the current year. It is a simplified goods train locomotive of the "50" series. Nothing on it is polished unless absolutely necessary, and many non-essential components are omitted. Meanwhile, a new type of 2-10-0 locomotive (*Kriegslokomotive*) has been evolved jointly by all German locomotive works in conjunction with experts of the German Ministry of Transport (*Reichsverkehrsministerium*), constituting the Chief Rail-Vehicle Committee (*Haupthausschuss Schienenfahrzeuge*), under the chairmanship of the Minister for Armaments & Munitions. The first locomotive of the new type left the works on September 12 and was subjected to a trial run of 5,000 km. (3,107 miles) through Germany, the General-Gouvernement of Poland, the Protectorate of Bohemia & Moravia, and other occupied countries, and it has now been decided that this new type, known as "Series 52," is to be mass-produced by all locomotive works in Germany and the German-controlled countries from January 1 next. This locomotive, the appearance of which is not greatly different from that of the simplified "Series 50" type, forms the subject of a brief article at page 546.

B.B.C. off the Rails

IT is remarkable how many pitfalls beset the unwary feet of those who attempt to hand out to the public, in films, newspapers, or broadcasts, "facts" concerning our railways. Most of us are familiar, for example, with the films in which, on a single non-stop journey, the engine at the head of the train changes with bewildering rapidity from streamliner to shunter and back again, and very likely runs the gamut of all four railway groups before the run comes to an end, possibly at the same station at which it started. A recent B.B.C. broadcast of the career of a locomotive driver, excellently devised, in the main well-informed, and conveying to the hearer some really vivid impressions of the engine shed and the road, slipped up in this way on a number of simple matters of fact.

In advance we were told in the *Radio Times* that this L.N.E.R. driver had driven the *Silver Jubilee* and *Coronation Scot* loco-

motives

Scot

to the

Kings

formal

in tak

Donca

that s

The

concer

in usi

even

plea

statem

knowle

produ

appea

IN ou

iss

utility

cates

taking

exclu

neither

was a

feature

able a

develo

utility

of the

to be

privat

tion to

and th

separa

group

the w

some

harbour

whether

electric

under

balance

most o

under

gation

conten

as publ

the Ad

with

undert

cannot

that it

public

they a

on by

So f

improv

the 19

on the

Genera

or imm

or use

public

it may

areas

takers

to goo

schem

utility

under

and fu

railway

owned

by

the

public

it

the

public

second question, authors arise as The point of it can

ference for days of states of graphical States always ent of property (0,000) coming were 0 kilometer that United case of pendence the railw, as need to Mexican experts circum- materials, at the

and German minster und ecton position loco- is a thing non- ce of p. m. p. lly, chuss for type trial general & been to be the monom- that brief

nt of news- Most on a train inter- rail- the cast the the ally in

E.R. co-oc-

motives; no engines exist of either name, and the Coronation Scot train in the property of the L.M.S.R. We were thrilled to the marrow by getting a 500-ton express up the bank out of Kings Cross through Finsbury Park at 60 m.p.h.—an epic performance indeed—and were amazed at the agility of the engine in taking water from Scrooby troughs on the down journey *after* Doncaster has been passed; the troughs are ten miles south of that station.

There were other minor lapses here and there. The driver concerned, too, was showing some very intelligent anticipation in using the Whyte locomotive notation in 1897, before it had even been devised. This is no carping criticism; it is merely a plea that more attention might be given to the accuracy of statements of fact in which many a schoolboy, with the expert knowledge of railway matters that he has garnered, could set the producers of such matter more firmly on the rails than they appear to be capable of travelling by themselves.

Railways and War Damage

IN our last issue reference was made to the many complicated issues involved in the question of war damage to public utility undertakings and the Government White Paper indicates, for example, that even the definition of such undertakings was not an easy task. Public utility undertakings were excluded from the 1941 Act because, for a variety of reasons, neither the contribution nor the payment structure of that Act was appropriate to them by reason of their peculiar physical features and the difficulty of separately valuing their immovable and movable property. Moreover, the distinction between developed and other hereditaments is not applicable to public utility undertakings, and the test applied by Section (4) (1) (a) of the Act for determining whether a cost of works payment is to be made in respect of a developed hereditament, is inappropriate to public utility undertakings which are under an obligation to render service. Particular cases vary in material respects and the general solution proposed to overcome the difficulty of separately valuing movable and immovable property, namely, group contributions, is not equally appropriate or workable over the whole range of such undertakings, especially in the case of some of the smaller railway, light railway, canal, dock & harbour, and so forth, undertakings. Broadly, the question whether undertakings such as road passenger transport, gas, electricity, and other services performed by persons not working under statutory powers, as well as by statutory bodies, should be treated as public utility undertakings, is dependent on a balance of considerations and consideration must be had to the most convenient course. So far as certain types of statutory undertakings, namely, railway, light railway, canal, inland navigation, and dock & harbour undertakings are concerned, it is contemplated that some, but not all, of them should be treated as public utility undertakings. It is proposed, therefore, that the Act should contain power to make orders, after consultation with representative associations, for naming individually the undertakings to be dealt with under this head in so far as this cannot be done by any general formula. The White Paper adds that it appears to be desirable that activities not themselves of public utility type but ancillary to the undertakings with which they are carried on, such as railway hotels, should, when carried on by the same person, be treated as part of that undertaking.

So far as public utility assets are concerned, in the case of immovable property which is "land" within the meaning of the 1941 Act, the first necessity will be that the person carrying on the undertaking should hold a proprietary interest therein. Generally, such assets will also comprise any property, movable or immovable (such as gas or water mains) which is owned, held or used mainly or exclusively for the purpose of carrying on a public utility undertaking, but in the case of immovable property it may be desirable to exclude such items as farms in catchment areas of water undertakings, and offices occupied by undertakers in large buildings owned by other persons. With regard to goods, it is proposed in general not to extend the scope of the scheme beyond that of the 1941 Act and, therefore, public utility assets will not include goods which would be uninsurable under that Act, for example, ships, their machinery, tackle, and furniture, but special considerations arise in the case of railway-owned ships (other than requisitioned vessels) and gas owned by gas undertakers, and these will be treated as public utility assets.

The proposals as to payments for war damage in respect of public utility assets are also somewhat complicated. In the case of immovable assets they will fall under two heads—payments of outlay and value payments. Payments of outlay will be made, broadly, in all cases in which works approved by the commission, after consultation where necessary with the appropriate Government Departments, were necessary to deal with the situation created by war damage to public utility assets. It is proposed that such payments should be made when (a) a damaged

asset is reinstated wholly or in part as it originally existed; (b) where it is reconstructed with alterations or additions, or (c) where it is superseded by something of a different kind or in a different place to perform the function for which the damaged asset was used. These payments, however, would be reduced to make allowance for the incidence of the factors of depreciation, obsolescence, and redundancy. A value payment will be made in respect of war damage to an asset when either no works similar to those mentioned above have been carried out or only temporary works were executed. It will be assessed as being the amount of depreciation in the value of the asset caused by war damage, with an appropriate deduction for the value of any articles which formed part of the asset and became available as materials by reason of the damage. Dealing with temporary works undertaken to deal with the situation created by war damage to public utility assets, it is proposed that their proper cost, but not additional operating and working expenditure, and the proper cost of any removals or other works necessary in connection with their abandonment, should be payable in addition to the payment of outlay or value as the case might be.

Special consideration will have to be given to cases in which works, while they meet the requirements of the public utility undertaking, involve incidental changes in its physical structure or in the use of land which results in war damage not being made good to a proprietary interest other than the undertaking concerned, for example, the replacement of a railway viaduct on another site which did not provide for the replacement of a tenant under one of the arches. So far as goods are concerned, it is proposed that such payments should be made in regard to public utility assets as would have been made if, when the goods were damaged, a policy insurance issued under the Business Scheme outlined in Part II of the Act, or under the War Risks Insurance Act, 1939, had been in force. Such payments will form part of the payments for public utility assets and, as there would thus be no separate premiums for goods, the necessity for their separate valuation for the purpose of assessing contributions will be avoided. It will be realised that even when the necessary legislation has been enacted, many complicated matters require to be determined before any reliable estimates of the war damage payments, and the consequent contributions of each group, can be fixed. The division of the war damage contributions between the constituent members of the individual groups may then present difficulties and it would appear that force of circumstances will, in any event, confirm the view of the chairmen in March last that the railway companies' liability for war damage is essentially a post-war problem. Should circumstances happily show that the worst period of damage to railway undertakings has passed, it may be found that the post-war burden will not prove unduly onerous if arrangements could be made to fund the contributions over a period of years.

Railway Transport Charges

A REMARKABLE article appeared in *The Times Trade & Engineering* for November on railway charges. It is attributed to the journal's "railway correspondent," but from it it would appear that the Traders Co-ordinating Committee and the Ministry of War Transport, but not the railway companies, have been discussing the level of railway charges. It will be remembered that early in the war the machinery of the Railways Act of 1921 in regard to the revision of charges was suspended by the Minister. Instead, under the first control agreement, he increased freight charges by 16½ per cent. to meet the increased costs experienced up to June, 1940. Due to an increase in traffic in 1941 compared with the depressed periods before the war, there was an increase in receipts greater than the increase in costs experienced up to June, 1940; and the Traders Co-ordinating Committee therefore appear to be claiming that the 16½ per cent. increase should be discontinued. Without any knowledge of these private discussions (we have not been able to obtain a copy of the statements attributed to the Minister, and, on enquiry, we find that the railway companies do not know of them or the "arguments" attributed to them by *The Times Trade & Engineering* correspondent), we can only assume that the traders object to the Government taking from the railways the profits earned in excess of those during the depression. But they do not seem to be suggesting that the railway companies might, inside their closely-restricted limits of standard revenue, be permitted to obtain a reasonable return on their capital, at this time of greatest use of it. The traders do not even appear to have suggested that the Government should forego any of their profits by increasing the railway standards of maintenance chargeable beyond those required in the depressed years.

The railway correspondent of *The Times Trade & Engineering* views with considerable alarm the prospect that after the war railway rates may be increased because the cost

of railway outgoings has increased, and the traders committee are stated to have suggested that the railways should "economise rather than increase charges." The "railway correspondent" who wrote the article should know well enough that the railways alone in this country are required to show annually the economy of their work to a court of law. *The Financial News* of November 17 throws a little more light on the matter. The Traders Co-ordinating Committee, it appears, has claimed that, but for the suspension of the part of the Railways Act, 1921, concerned, the standard revenue would now have been reached (in fact, a former Minister of Transport said so in the House of Commons in April, 1940) and the charges would now have been reduced. This implies that the net revenues of the railway companies for the years 1939, 1940, and 1941 exceeded in total £154 millions, or an average of £51½ millions, after meeting all the costs in respect of those years and the addition of 20 per cent. of the surplus to the standard revenues and 80 per cent. applied in reduction of rates and charges. Anyone who cares merely to add up the actual net revenues of 1939, 1940, and 1941 can see at a glance that this is not so. The standard revenues were undoubtedly earned in 1941, and probably will be in 1942, but that is not to say that had the provisions of the Railways Act not been suspended there would have been a case for a reduction of charges. This apart, however, the fact remains that the standard revenue provisions have been suspended and the railways are not permitted to earn the reasonable return on their capital to which they are entitled under that Act. It cannot reasonably be suggested that the 1921 Act should operate for one and not for the other. The existing financial arrangement between the Government and the railway companies is far from generous, and there is a far stronger case for a more equitable adjustment there than for a distribution of the surplus in reduced charges. The Government, however, has made it plain that no upward revision of the fixed payment to the railways can be made. One thing at least seems clear: The repeated statements in certain quarters that the railways are subsidised by the Government are completely false.

International Railway Relationships

FOR many years past, international relations between railway administrations have been governed by various associations which have guided or regulated matters of common interest, mostly connected with the exchange of traffic, but also, on a wider basis, with the exchange of experiences in operating, engineering, judicial, financial, legal, labour, and other subjects. Governments participate in some of these associations, and decisions taken in their meetings have been ratified and legalised in the associated States. Other railway associations include shipping and air lines, and sleeping and dining car companies interested in international traffic routes. In addition to the large international groups, there is in existence a number of more or less close associations between railways of neighbouring countries, which by bilateral agreements cover matters of common interest only to these particular countries. Finally there is a large number of purely national associations of which the members are administrations of one country, where the whole main railway system is not in the hands of one undertaking, State or private. These associations are in many cases much more intimate, and the regulations cover such subjects as pooling of resources, of revenue and expenditure, of rolling stock, standardisation of equipment, matters of general policy, staff, labour conditions, etc., mostly subjects which could not very well be included in international unions.

Of first importance are those international associations which aim at facilitating through passenger and goods traffic, dealing with rates and fares, conditions of transport, financial claims, clearing, timetables, common use of rolling stock, provision of sleeping and dining cars, and similar matters. In close relation therewith are associations with the object of securing technical unification of equipment to facilitate the exchange of rolling stock, which requires provisions as to similarity of gauge, loading gauge, couplings, brakes, axle loads, and maintenance away from home. Separate organisations exist to facilitate free communications generally between nations, obviously with Governmental participation, by dealing with such matters as customs, passport, and immigration formalities, and the transit of goods and passengers, open and in bond.

The primary condition for uninterrupted through traffic is similarity of track gauge, and this condition has led to the association of railway administrations in geographical units, embracing territories with railways of the same gauge, and bordered by stretches of water too wide to provide train ferry services. One such territory is obviously Continental Europe, and a wide range of associations covers some or all of the standard-gauge countries, but excludes in many cases the broad-

gauge railways of Russia and the Iberian Peninsula; in a few cases the British railways are included. Some of the activities of these associations overlap, by reason of the widely varying dates of their formation. In Europe more than anywhere else, the war has played havoc with international railway traffic, and it appears that it will be unavoidable after the war to reconsider the functioning of many of the pre-war associations. To facilitate this, we begin the publication, on page 549, of a review of the European railway associations in existence up to the outbreak of war, set out in outline. The full list is as follows:—

The two Berne Railway Conventions, C.I.M. and C.I.V.
International Transport Committee
International Technical Standards Conferences
International Wagon Union (R.I.V.)
International Carriages & Vans Union (R.I.C.)
European Timetable Conference
European Goods Trains Timetable Conference
International Union for the Issue of Through Tickets
International Containers Bureau
International Railway Congress Association
League of Nations, Communications Section
General Conferences on Freedom of Transit
Permanent Advisory Committee for Communications & Transport
International Railways Union (U.I.C.)
Union of Central European Railway Administrations (Verein)
Eastern European Change-of-Gauge Associations (Two)
East European Group of the International Railways Union
Northern Railways Officials Association (Nordisk)
International Tariff Associations

The G.W.R. Rules & Regulations Committee

THE unbroken development of measures designed to promote safety in all branches of railway operation and of the staff in the execution of their duties has been an outstanding feature of British railway history for more than a century. This development has gone far to secure for the industry that reputation for efficiency it proudly possesses which is second to that of no other country in the world. Lessons learned in the stern school of experience, the capacity for one company to profit, not only from its own mistakes, but also from those of another; continuous improvements in operating plant and equipment of every description, and the intensive education and frequent examination of the staff concerned, are among the major factors which have contributed to this end. The basic principles of the regulations for maintaining safe and efficient working of the railways, now largely of common adoption throughout the industry, have gradually evolved in the manner described, but for many years the Great Western Railway in particular has co-ordinated the consideration of all questions relating to safety in operation in a committee styled the "Rules & Regulations Committee."

The Great Western Rules & Regulations Committee was inaugurated in July, 1911. Its first Chairman was Mr. R. H. Nicholls—then Assistant Superintendent of the Line. The committee's original remit was to consider, and report on, the recommendations of the Board of Trade Inspecting Officers relative to the protection of trains and vehicles when detained at signals or shunting at block posts. The committee meets quarterly and is composed of representatives of the Superintendent of the Line and certain of the Divisional Traffic Officers, the Chief Mechanical Engineer, and the Signal Engineer, and the office of Chairman is vested in the Operating Assistant to the Superintendent of the Line. Broadly, the committee's functions are to examine the findings of departmental inquiries held into mishaps or operating irregularities on the Great Western Railway and the reports of Inspecting Officers of the Ministry of War Transport on railway accidents, and to submit recommendations arising from such consideration, as well as themselves to initiate proposals for strengthening and improving the rules and regulations governing all traffic operations. The results of the committee's deliberations, which are considered by the Superintendent of the Line and his Divisional Officers in conference, may, and frequently do, become the genesis of suggestions for new or revised regulations either domestic in character to the Great Western Railway or of application to the railway industry in general. In the latter event, of course, the proposals would fall first to be dealt with by the appropriate committee of the Railway Clearing House.

The close analysis which is made by the Great Western Rules & Regulations Committee of mishaps and working irregularities has brought to light the need for augmenting and improving signalling apparatus, engine and train equipment, as well as the necessity for amplifying or amending working rules and directions to the staff previously thought to have been so drawn as to meet every conceivable set of circumstances. The regulations covering the care and maintenance of First Aid appliances carried in all trains have been made more specific and general directions to trainmen have been laid down covering the appropriate steps to be taken in order to mitigate the effects of any mishap.

As typical amendments to the standard instructions resulting from the committee's recommendations mention may be made of

that which provides for a signalman to send the "Call Attention" signal—one beat on the bell—before the "Is Line Clear?" signal, and that this signal must always be acknowledged immediately on receipt. The instruction emphasises the need for the "Call Attention" signal to be repeated until acknowledged. This amendment took its rise from a review of the circumstances connected with a working irregularity when a signalman, having added "Is Line Clear?" for a Down express was offered an Up express at the same time. Being unable to accept the Up express, he mistook four beats on the bell—a repetition of "Is Line Clear?" for the Up express—as an acceptance of the "Is Line Clear?" for the Down express, and, without looking to see whether the disc showed "Line Clear," lowered his signals and allowed the Down express to go forward. The Great Western clause in the Block Regulations which reads:—"If a train should pass with tail light out when it should be burning the signalman must act in

precisely the same manner as in the case of a train passing without a tail lamp" was included because following a review of an irregularity in working the committee expressed the view that a signalman might in certain circumstances at night experience difficulty in deciding whether the lamp is on the train. The standard Electric Train Token Regulation that if a disabled train is to be withdrawn from the section "the assisting engine must draw the train back to the token station but must bring it to a stand at the distant signal and the fireman must walk in front of it from there to the home signal" is based on a recommendation submitted by the Great Western Committee after it had called attention to the risk involved in the case of an assisting engine drawing a train back to such token station in the rear by reason of the possibility of the line at the station being occupied in connection with shunting operations. Some specimen minutes extracted from the committee's proceedings are appended.

DOUBLE LINE BLOCK REGULATION 5—REMOVAL OF OBSTRUCTION BEFORE DRIVER SIGHTS DISTANT SIGNAL

The note preceding clause (a) of Regulation 5 requires that "Signalmen at Boxes using it must, wherever practicable, have the obstruction removed before the Engineers of the warned train will sight the Distant Signal." Incidents recently reported suggest that there is a failure of Signalmen to appreciate the importance of this instruction. The Committee considered whether any steps could be taken to remove any misunderstanding on the part of Signalmen as to the intention of this instruction, but felt that in the interests of working and operating of the Railway it would not be desirable to alter the regulation as now worded. The Committee were of opinion, however, that it is necessary to check any disregard of the requirements of this Note and Signalmen should be reminded of this by the Supervisory Staff.

WORKING OF DIESEL CARS. PERMISSIVE LINES

In connection with the working of Diesel Cars over permissive lines, the Committee recommended the following instructions be issued for adoption:—

"When empty Diesel Cars are required to be worked over permissive lines the following instructions must be observed:—

"Trains which are admitted to a permissive line immediately following a Diesel Car must be brought to a stand at the signal box in accordance with Clause 9 of the Permissive Block Regulations and the Driver verbally told that a Diesel Car is in the Section ahead. The Driver of a train which is so admitted must proceed with caution and must take care not to buffer up to the Diesel Car."

LOOSE SHUNTING OF STEAM CRANES

Damage was recently caused to a Stop Block and rolling stock owing to a shunt of wagons, including a steam crane, with brake van attached being loose shunted into a siding, the brakes being unable to control the movement owing to the weight of the steam crane.

The desirability of amending Rule 110 to prohibit the loose shunting of steam cranes was discussed. There is no record of a similar incident and as such prohibition, if definitely covered by the Rule, would have to be extended to many other types of vehicles and exceptional loads, it was decided that further amplification was undesirable.

TRAIN REGISTERS—INSPECTION BY STATIONMASTERS

In order to minimise the possibility of any laxity arising in the signalling of trains, it was agreed that Stationmasters, and District Inspectors when visiting Signal Boxes for periodical inspection, should sign the Train Register across the page immediately beneath the last entry.

WORKING OF GOODS LOOPS—RULE 50

It has been reported that difficulty is being experienced in getting a prompt and satisfactory indication from guards that their trains have arrived complete in the loop at places where a loop is worked by one box placed in the middle of or at the outlet of the loop.

A suggestion that definite regulations be made that a guard in charge of a freight train should be required to give a green hand signal in such circumstances as is at present required by the Permissive Block Regulation and that he should not consider such hand signal has been seen until he receives acknowledgement from the signalman was reviewed.

There is no rule which requires the guard to give a hand signal under such circumstances and the Committee appreciated that if this were provided for, and an acknowledgement by the signalman required, it would be placing additional work on the signalman. The Committee, nevertheless, consider that having regard to the evidence of delay under such circumstances, the known difficulties which arise at many points and the fact that the guard has no evidence from the signalman's action that his hand signal has been seen, as is usual with other hand signals, it is desirable the following be amplified:—*Permissive Block Regulations*.—To provide for the guard making use of the telephone to the signal box wherever provided and for the guard's hand signal (vide Cl. 8 (b)) being acknowledged by the signalman. The latter to exhibit a white light held steadily at night or during fog or falling snow. In addition, to include a note to the effect that Section VII of the Book of Regulations for Train Signalling on Double and Single Lines is to be regarded as applying to loops and goods lines controlled by one signal box insofar as they are applicable except as varied by local instructions.

Rule 147.—To provide for the guard of a freight train admitted to a loop or goods line making use of the telephone where provided and where this is not available giving a hand signal to the signalman and obtaining acknowledgement from him.

Rule 50 (d).—To provide for a white light held steadily being exhibited during darkness by a signalman in acknowledgement of the guard's green hand signal required by the amplification of Rule 147.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Locomotive Naming Ceremonies

6, Armitage Road, Birkby,
Huddersfield. Nov. 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—I notice that endeavour has been made to place the naming of locomotives on the same plane as the decorating of those who have gained fame in the air. This, I gather, is based on the erroneous assumption that the locomotives referred to are being named after the men of the Merchant Navy. It may be recalled, however, that the original idea in so naming these locomotives was in recognition of the close relation existing between the various shipping companies and the Southern Railway, and not, as your correspondent suggests, as a tribute to Great Britain's shipping heroes.

No doubt most of us find the particulars given at these naming ceremonies interesting, more especially when, as I have earlier indicated, they tend to be misleading. Let it suffice to suggest that the myth which Mr. Richards fails to understand disappeared as a result of mass and organised application of erasers some five years ago, since which time these locomotives have hardly looked back except perhaps to wonder what "Air-Smoothing" had to do with goods trains, how naming ceremonies could be national assets, and why nameplates were added when the "Met." is helping the war effort by removing them.

Yours faithfully,
R. HOWARD

First Class Carriages

Benhurst Gardens, Selsdon,

Surrey, Nov. 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—Mr. Ashley Brown, writing on the question of abolishing first class carriages on our railways, decides that railways should not be distinguished from steamships, theatres, or hotels and comments on the enthusiastic but irresponsible person who never troubles to enquire where his logic will lead him. There is not much logic in Mr. Brown's letter.

I did not see your article dealing with the financial side of this question (Mr. Ashley Brown quotes your issue of November 9) for I am not fortunate enough to see THE RAILWAY GAZETTE regularly and this may also explain why I have never read anything but condemnation of any suggestion to abolish first class although there are usually at least two sides to a question.

However, perhaps you will not object to my pointing out that if you wish to book for a theatre, hotel, or liner you will be told what accommodation is available and the price thereof. The Cunard Company (mentioned by Mr. Ashley Brown) does not accept bookings *ad lib* for one of its sailings but on the other hand our railways have no limit to their bookings and proudly announce that although spare seats may be available on the train they do not guarantee one of the class for which they have accepted your money.

The solution appears to be to run trains of one class only based, if you wish, on what experience proves to be the financial result of each service. If, say, to start with, one train in four was for first class passengers only, with schedules for both classes of trains based on public user and the financial results, I suggest the railway companies would soon be cutting down the proportion of first class only trains.

Yours truly,
JAMES WILLIAMS

Urban Train Services in 1880

London, W.C.1, Nov. 27

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—The recent correspondence concerning railway facilities of 60 years ago has drawn attention among other things to the fact that in the early 1880's there were many urban train services in the London area which have long since been abandoned. Some of your correspondents would seem to imply that this indicates a wilful or careless withdrawal of public facilities on the part of the railways for reasons best known to the managements, but based on considerations other than those of public convenience. Superficially, such a contention can often be supported by a comparison of railway timetables if made on purely statistical grounds and without bearing in mind the vast changes in conditions between the periods compared. In fact, I suggest that one of the fundamental mistakes of most railway commentators and historians is to treat the railway as an isolated phenomenon rather than to consider it in true perspective in relation to social and economic conditions of the particular period in which its activities are under review.

In the London area, for example, the construction of the first section of the Metropolitan Railway in 1863 may be regarded as the initiation of the movement towards dormitory areas. Previously the vast majority of workers—black-coated and otherwise—had lived adjacent to their place of employment, or at least within walking distance. The growth of business London increased the site value of the central area to an extent which made it unattractive for individual working-class houses, with the result that large blocks of flats were built to accommodate the maximum number of persons on the minimum acreage, and many persons moved outwards to points beyond walking range from their place of business.

At that time, steam railways provided the only means of mechanical transport for passengers (if we except experimental steam trams, compressed-air trams, battery vehicles, and so forth), and the railways necessarily tackled their new task by building branch lines and establishing many local services. The workman's ticket dates from this period. With the approach of the new century, electric tramways and motorbuses began to alter the complexion of urban transport in providing that door-to-door transit which workers demanded and which railways without access to central London could not provide; thus, when the Metropolitan, the District, the L.B. & S.C.R., the North London, and other railways were considering or undertaking electrification of suburban services, they were guided by the trend of traffic then prevailing. They electrified "trunk" routes of heavy traffic, and withdrew circuitous steam-operated services for which the need had ceased.

Yours faithfully,
CHARLES E. LEE

Railways and Fuel Economy

London, S.W.1, Nov. 27

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—I have often wondered what procedure British railways adopt in dealing with the ashes dropped from locomotive fireboxes, and a broadcast the other night recommending householders to sieve their household ashes with a view to recovering serviceable cinders added to my curiosity as regards railways. British railway coal consumption must run into millions of tons a year and I should imagine there must be thousands of tons of serviceable cinders from this large consumption. I have never seen this matter mentioned in the press in connection with fuel saving.

Looking back on my rather old experience of over 40 years ago on the East Indian Railway, I recollect that all ashes dropped from fireboxes were sold to contractors. There was great competition for these ashes and high prices were obtained. The proceeds were absorbed in revenue earnings and were not allowed as a credit in locomotive running expenditure. This attracted the attention of the locomotive authorities and, after investigation, it was decided to deal with the matter departmentally. It was realised that a few extra shovelfuls of coal towards the end of the trip considerably enhanced the value of the ashes to be dropped with the resultant possible implications.

An organisation was set up by the locomotive department, which sorted out, sieved, and divided into classes of cinders according to quality; the best of these were used in pumping-engine boilers and lighting up furnaces and other railway purposes; the rest were either sold or made available for engineers' ballast, and so forth. Practically all household cooking by the railway staff was done with these cinders, which they were allowed to purchase, and a considerable economy resulted. Even smokebox ashes found a ready sale in those days which, if I remember correctly, were used for brick burning purposes.

It has been announced that the waiting rooms on British railways will not be provided with fires this winter. With a little organisation it should be possible to use serviceable cinders recovered from ash pits, with perhaps a small percentage of coal, to heat all the waiting rooms in the country, which would add materially to the comfort of travellers. The disposal of locomotive ashes on a railway is really a very important matter and there is little doubt that an efficient organisation for dealing with the subject results in great economy.

Another indirect waste of fuel on railways, assuming water is pumped, is the unnecessary amount of water used in washing out locomotive boilers. Times without number I have seen streams of perfectly clean water streaming out of boilers during washing out operations, when it was perfectly obvious that the incoming water might have been shut off some time before, thus saving many gallons of water.

I have little knowledge of the inside working of British railways and perhaps these unspectacular but important items in routine working, usually controlled by subordinate staff, involving possible wasteful expenditure, which often escape the knowledge of the higher authorities, may have the attention they deserve.

Yours, etc.,
A. C. C.

The
London
33, T
112 P
ninth
Hand
is des
with o
tistica
longer
accor
as we
Univers
and R
far as
tables
possible
cerned
but t
fastest
and
section
railwa
proven
up to
be no
Italy a
Som
duced
ments
the ba
contro
owners
The c
include
genera
main-l
given,
main P
also i
Transp
mittee,
data po

Gear
M.I.M
Sons L
Street,
414 P
This b
publis
because
enginee
unless
time t
enginee
design a
in this
do so.
who wa
technic
organis
difficult
generall
visualis
figures,
things th
author's
are in a
the au
success
ingly i
interest
tooth co
on thi
with an
gator in
page 54
We hav
the ne
quality
panying
surface
especial
not nea
impressi

Publications Received

The Railway Handbook, 1942-43. London: The Railway Publishing Co. Ltd., 33, Tothill Street, S.W.1. 8½ in. x 5½ in. 112 pp. Paper cover. Price 4s.—The ninth annual edition of "The Railway Handbook," which has just been published, is designed to provide the railway student with a collection of useful statistics and other information. Some of these statistics, based on official returns, are no longer available during the war and are accordingly dropped from the Handbook as well as from the parent volume, "The Universal Directory of Railway Officials and Railway Year Book." Nevertheless, so far as they are available, all statistical tables have been revised up to the latest possible date. Most of the data is concerned with Great Britain and Ireland, but there are several tables relating to fastest runs in the U.S.A., and Australian and Eireann railway statistics, and a section on the electrification of steam railways. Despite war conditions, it has proved possible to revise this information up to 1942, and substantial changes may be noticed in the electrified mileages of Italy and Sweden.

Some new sections have been introduced into this edition. These are statements on Government control of railways; the basis of passenger fares; central wagon control on British railways; private owners' wagons; and passenger amenities. The chronology of railway history is again included, as it has been found to be of general interest. Particulars of the four main-line railways and the L.P.T.B. are given, as well as of all other British non-main line railways. Revised entries are also included of the Ministry of War Transport, the Railway Executive Committee, the Railway Clearing House, and data pertaining to war transport legislation.

Gears. By H. E. Merritt, D.Sc., M.I.Mech.E., M.I.A.E. Sir Isaac Pitman & Sons Ltd. London: Pitman House, Parker Street, Kingsway, W.C.2. 9 in. x 6 in. 414 pp. Illustrated. Price 30s. net.—This book has rightly been placed by the publisher in its "Specialist's Series" because the subject is one concerning which engineers must decide to know very little unless they are prepared to give much time to it and study it deeply. Most engineers prefer to leave problems in gear design and manufacture to firms specialising in this class of work and they are wise to do so. However, the author of this book, who was for a number of years the leading technical expert of the David Brown organisation, has done his best to bring a difficult study within the reach of engineers generally. Anybody with the ability to visualise three-dimensional geometrical figures, and to follow trigonometrical deductions therefrom, will be able to follow the author's arguments with profit. Those who are in a position to judge have long admired the author's genius for applying with success relatively simple methods to seemingly insoluble problems. Particularly interesting is his method of investigating tooth contact in worm gearing. His work on this subject may fittingly be compared with an earlier paper by a different investigator in the same field which appeared on page 546 of *The Engineer* for May 20, 1932. We have only two criticisms to make of the new book. The first relates to the quality of the half-tone illustrations accompanying Chapter 10 and showing the surface defects in worn gears. These, and especially Figs. 10.9B, and 10.10, are not nearly clear enough to convey the impression intended. The second criticism

relates to the omission of information on hypoid gears and on worm gears of the globoidal type. The hypoid gear has been evolved scientifically to meet a special need, and there is no reason why it should not have been discussed more fully. The globoidal worm gear, as exemplified by the Lanchester and the B.B.B. types, gave a good account of itself in high-quality motorcars, and, even if it defies mathematical analysis, it is deserving of more notice than it receives. Notwithstanding these minor shortcomings Dr. Merritt's book is likely to be the standard British treatise on the subject of gears for many years to come.

Transportation and Total War. By Patrick C. Young. London: Faber & Faber Limited, 24, Russell Square, W.C.1. 8 in. x 5½ in. 144 pp. Illustrated. Price 6s. net.—The principal contention of this book is that the war has brought about a situation in Great Britain in which it has become urgently necessary to make radical alterations in the services offered to the public by the various transport agencies, both rail and road, and in the charges which customers are asked to pay. The author advocates the immediate introduction of a greatly simplified system of rates and charges, partly with the object of inducing true economy in the use of transport. The author does not criticise the detail management of existing transport agencies, but advocates various fundamental changes, which he recommends be effected under the direction of a Chief of a General Transportation Staff who would prepare an initial plan and ensure that it was carried out, making necessary changes promptly and efficiently. We hope to consider at greater length in due course the suggestions made in this little volume.

Electrical Engineering Practice. Vol. 2. By J. W. Meares, C.I.E., F.R.A.S., M.Inst.C.E., and R. E. Neale, B.Sc., Hons. (Lond.), A.C.G.I. Fifth edition. London: Chapman & Hall Limited, 11, Henrietta Street, W.C.2. 8½ in. x 5½ in. 668 pp. 152 ff. + plates. Price 35s. net.—As a standard textbook on electrical practice "Meares & Neale" has won itself a recognised and well-deserved place. It has the rare merit of giving fundamental and practical data in such lucid forms that engineers of all types make a habit of referring to it whenever electrical questions arise. The subject is one which is always rapidly developing and any comprehensive book on it needs periodical revision. The authors recognise this to the full and it is only because the fourth edition of this volume was perhaps ahead of its time that it has been able to hold the field so well since 1927. Considerable work has been done in the present revision, not only in details but also in the provision of additional material, which exceeds 20 per cent. All references to legislation, standard specifications and rules of practice have been brought up to date, and developments such as luminescent lighting are given adequate treatment. Railway matters, as such, are dealt with in vol. 3, but reference is made on p. 127 to articles by one of the authors in THE RAILWAY GAZETTE, Electric Railway Traction Supplement, on the grid control of mercury arc rectifiers as used for traction purposes. This is a subject of increasing interest in railway quarters, for the rectifier has now very largely superseded other forms of converting equipment such as rotary converters for the supply of direct current for electrification schemes from alternating current sources of power. Meares & Neale, of course, also treats

rotaries very adequately and there are few aspects indeed of electrical engineering that will not be found similarly well handled on reference to the appropriate section. In this connection, we may add that this new edition of vol. 2 contains a comprehensive corrected index to all three volumes. The principal topics in vol. 2 complete the section on transmission, conversion, and storage, by means of Chapter 17 on transformation and conversion of (electric) energy and Chapter 18 on secondary cells; there are six chapters on distribution and control in branch circuits and a section on electrical applications is commenced by chapters on lighting; on electric heating, cooking, cooling, and air conditioning; and on welding and cutting. Production throughout is of the high standard associated with books published by Chapman & Hall, and both the line diagrams and plates have been revised and increased in number.

Essays in Transportation: In Honor of W. T. Jackman. Edited by H. A. Innis. Toronto, Canada: The University of Toronto Press. 9 in. x 6 in. 165 pp. Price 11s. 6d. net.—This volume, which was reviewed in THE RAILWAY GAZETTE of October 9, 1942, page 340, is obtainable in London also, from Sir Humphrey Milford, Oxford University Press, Amen House, Warwick Square, E.C.4.

The Grove Record: The Organ of No. 2 Headquarters Branch, Railway Clerks Association, October, 1942. This is the first issue of *The Grove Record*, the successor of *The Euston Record*, and, in the words of the Editor, it files its claim to fortune's favour on the ground that fortune favours the bold. The Editor, Mr. L. A. Howlett, of the Chief Accountant's Office, L.M.S.R., recalls the conditions which prevailed at The Grove, in common with so many other newly-evacuated headquarters at that time, during the first winter of the war, and contrasts them with the, by comparison, "utopian" facilities which are now available. The pages of *The Grove Record* show how great a variety of activities have been organised at the temporary headquarters of the L.M.S.R., and include information on the work of the R.C.A., the Home Guard, library facilities, gardening the L.M.S.R. prisoners-of-war comforts fund, and other subjects. There is also a page of book reviews.

The Institute of Transport Handbook.—A new edition of this handbook has just been published. It contains a note on the foundation of the institute and reproduces extracts from a letter written in 1919 by the late Sir George Gibb in which he discussed the functions and sphere of the then proposed Institute of Transport. Also included are the principal rules of the reconstituted local sections, and a note on the examinations intimating that certain changes, to be effective as from October 1, 1943, are in contemplation. The changes comprise the substitution of modern economic history for languages and mathematics, and of English for essay in the graduation examination. In the associate membership examination it is proposed to provide alternative papers in rights and duties of transport undertakings, namely, inland carriage and ocean carriage, to re-model the syllabus (and probably amend the title) of transport finance and accounting, and to omit advanced statistics. The usual particulars of objects, qualifications for membership, examination regulations, and syllabuses are included. Copies of the handbook may be obtained from the Secretary, Institute of Transport, 15, Savoy Street, Victoria Embankment, W.C.2,

The Scrap Heap

For stealing property worth £794 from an L.M.S.R. luggage van, a man who had been district inspector for 28 years was at Hendon recently sentenced to six months. By his theft he forfeited a £350 cash bonus and a £10 a month pension.

* * *

A Canadian motorist, whose car is his only means of transport to and from work, finding one of his tyres apparently beyond repair, filled it with sawdust. He is stated to have said that it is standing up to daily use. This is the first instance of a sawdust-filled tyre of which we have heard.

* * *

Mr. T. E. Hinchcliffe, prosecuting counsel, in a case at Preston Sessions recently, in which a man was sentenced to eighteen months' imprisonment on eight charges of stealing suitcases on the railway, said that this type of offence was getting beyond the control of the police. He added that so far this year the L.M.S.R. had paid out no less than £100,000 to persons who had lost their property by thefts of this kind.

* * *

ADVERTISING IN VERSE

India's railways are feeling the pressure of wartime's increasing demands for transport facilities for essential commodities and fighting equipment. How far the demand has already gone is seen in an advertisement in a recent *Statesman*, Calcutta. Issued by E.I. and B. & A. Railways, copy was confined to a verse in simple metre, a plea from "Tommy Atkins" who concludes a recital of the rigours of Army life in India for the soldiers who are there to fight in defence of that country with these words :

Yes, we'll face what lies before us,
But you owe us something, too ;
Isn't there a simple service
Each one of you can do ?
There is ! We need munitions,
You can aid us in the fight,
If you'll only TRAVEL WHEN YOU
MUST,
AND ALWAYS TRAVEL LIGHT.—
From the "World's Press News."

* * *

PLANNING

"One of the four freedoms for which we are fighting is freedom of speech—that is, the right of every man and woman to say what they think on any subject, provided they do not exceed the limits of decency, and provided that what they say is not treasonable.

In theory, everybody is a supporter of free speech. But in practice ?

I recently expressed my own views on planning. They may be right or they may be hopelessly wrong. But the point is that

they are my views and are sincerely held. I am the first to acknowledge that there are many people who are diametrically opposed to me, and I can honestly assert that I would not raise my little finger to fetter them in stating their side of the case. Because I happen to be a genuine believer in freedom of speech.

Unfortunately, one cannot say the same of all the planning fraternity. Perhaps because they are conscious of the inherent weakness of their position, some planners are moved to an extreme pitch of indignation by anybody daring to disagree with them. For example, one planning-addict has written to the editor of the *Daily Sketch* extolling the merits of planning and ending his letter thus : 'Why don't you give a hand and boot *Candidus* out ?'

I am not concerned with this letter so far as it touches my personal fortunes, since no notice whatever would be taken of this planner's attempt to rob another man of his livelihood. Such requests to editors from disgruntled readers are a commonplace of journalism. If they were acted on, which they never are, every journalist in the newspaper business would be out of a job.

What I am concerned with is the type of mind that this sort of letter reveals. It is tempting to describe it as the typical planning-mind, but that might be unfair. It is, however, fair to say, from my own experience, that it is typical of the attitude of the majority of planners. It gives us an ominous hint of what our lot will be if the planners are ever in control. There will not be one freedom left, let alone four."—*"Candidus"* in the *"Daily Sketch"*

* * *

"THE STATE"

Many unthinking people in this country, because they do not trouble to picture to themselves how a theory would appear in practice, assume, for instance, that if the coalmines or the railways were "nationalised," made the property of "the State," they would become the property of "the people," that Jack Robinson, travelling third-class to town in the nine-fifteen, would be able to say to himself, "Well, at all events this train belongs to me." I do assure them, they are wrong. "The State" is not a benevolent, white-bearded old gentleman, at present sitting on some cloud and waiting to be fetched down to earth. "The State" is Mr. Theobald Penson, who lives next door to Jack Robinson, a man whose ambition is to sit at an official desk, with a pile of forms before him, dressed in a little brief authority, and there to thwart, and harass, and bully his fellow-citizens by every means in his power, which is unlimited. "The State" is officialdom, the implacable enemy of all human freedom and dignity. "The State" is that great army of exclusive and exempt and privileged and mutually back-scratching officials which we already have multiplied by a thousand. "The State" is not



One of a series of five posters issued by London Transport to warn passengers against blackout dangers

the community of all citizens, all of equal rights and duties. "The State" is a new ruling class of officials, great and petty, far more immune, immutable and immovable than our present rulers.—From "All Our Tomorrows" by Douglas Reed.

* * *

SOUTHERN LOCOMOTIVE DESTROYS RAIDER

Railway engines have been attacked with gunfire by raiding aircraft on both sides of the channel and the impression has grown up that they are defenceless monsters to be pestered with impunity. The first engine to disprove this vainglorious theory was, we are glad to note, a British one. It was attacked by an evening raider while pulling a passenger train in a south-east coast area. The boiler exploded, sending fragments of metal into the air with such violence as to hit and wreck the enemy machine. The train came to a standstill without derailment and without injury to any of the passengers. The engine driver was tossed from his engine on to the embankment but escaped with a shaking. The fireman was scalded by steam, but he did not fare so badly as the enemy pilot, whose dead body was found on a bank about 100 yd. away from the train.

* * *

SEWELL AND SEWILL

Mr. A. E. Sewell, L.N.E.R. goods manager for Scotland has been released from his duties to become chairman of the railway panel of the Road-Rail Central Conference. The chairman of the road side is Mr. R. W. Sewill.—From "The Evening Standard."

* * *

TAILPIECE

Holders of 'platform' tickets are not allowed to enter trains, *vide* recent court case.

Take heed, and do not flout this law.

The powers do ordain.

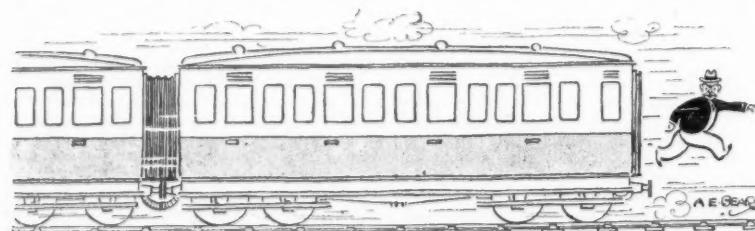
Pay your penny, grab your ticket,
This will pass you through the wicket,
Not into the train.

Take heed, for this indeed is law.

By which you must abide.

Wave good-bye to wife or daughter,
Slam the door and tip the porter,
And do not step inside.

E. C.



"Dammit—no dining car AGAIN"

[Reproduced by permission of the proprietors of "Punch"]

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

CANADA

The Soo Line

The Interstate Commerce Commission of the United States recently approved an amended plan for the reorganisation of the Minneapolis, St. Paul & Sault Ste. Marie Railway (Soo Line), a subsidiary of the Canadian Pacific Railway (see THE RAILWAY GAZETTE of August 28), since when a hearing of objections to the scheme has taken place before a federal court in Minneapolis. The two objectors were a representative of four Ohio bondholders, owning first consolidated bonds of \$65,000 par value, and a representative of the Guaranty Trust Company of New York; the latter, as the trustee of the Soo Line first refunding mortgage bonds, urged a higher capitalisation than that proposed by the I.C.C. Both these objectors had been heard previously by the I.C.C., and their demands had been rejected.

Those who appeared in support of the plan were representatives of a majority of mortgage bondholders, including the Canadian Pacific Railway, the largest owner of Soo Line securities.

The capitalisation of the reorganised company, as approved by the I.C.C., would consist of \$8,051,630 of first mortgage 4½ per cent. income bonds; \$20,129,076 of general mortgage 4 per cent. income bonds; and 719,180 shares of no par value. In addition, \$1,948,370 of first mortgage 4½ per cent. income bonds would be placed in the treasury of the reorganised company.

A Coaching Record

The Canadian National Railways handled 20,000 passenger coaches in and out of Bonaventure Station during August last, a record figure for many years. These included sleeping, observation, parlour, dining, and buffet cars; first-class coaches; and baggage and express coaches. The average number handled daily was estimated at 650 coaches. The bulk of this traffic represented a direct contribution of the Canadian National system to the war effort; the heaviest traffic originated between Montreal and the eastern Atlantic seaboard. In this respect a new record has been set up, in that during August the all-sleeper Ocean Limited and the Scotian ran in two or more sections every day of the month. The Maritime Express also operated in more than one section during the greater part of August.

C.P.R. Tin Consumption

As the result of the grave developments in the Far East, a conference was called in Ottawa last January to discuss measures for conserving tin, at which representatives of industries which normally use tin in large quantities were in attendance. As an example of the success of various measures decided on, figures recently given by the Chief of Motive Power & Rolling Stock, Canadian Pacific Railway, show that the company has reduced its normal consumption of tin by approximately 60 per cent. The greatest saving has been effected in babbitts for bearings. By employing an arsenical babbitt, the tin content has been reduced from a minimum of 6.50 per cent. to a minimum of 1.50 per cent. A large amount of babbitt for piston-rod packing, containing as much as 88.50 per cent. of tin, has been replaced by a copper-lead composition having no tin content. In

the case of solders, half-and-half mixture of tin and lead was employed commonly for general work, but this ratio has been altered to 38 per cent. of tin and 62 per cent. of lead. For some purposes, the tin content of solders is reduced to 25 per cent., with 75 per cent. of lead, and, for tinning babbitt linings, the tin content is as low as 10 per cent., where 50 per cent. solders previously were used in some cases.

UNITED STATES

New Construction

A programme of improvements to terminal facilities in South Philadelphia, which was suspended in 1931 but now has been carried to completion by the Pennsylvania Railroad, has cost \$3,000,000. It includes a new receiving yard extending from Broad Street to Delaware Avenue; rearrangement of yard tracks serving the Girard Point grain elevator and the petroleum industries in the Point Breeze district; and a new shed, tracks, and lighting on Pier No. 82. The trackage of the new yard has a capacity for 3,000 bogie freight wagons. Between Belton and Citadel, Montana, about 1,150 miles west of Minneapolis, the Great Northern Railway is constructing a new line 8 miles in length, at an estimated cost of \$400,000, to improve the existing main line between these points. The new route will shorten the distance by 0.4 mile, and at the same time will eliminate 17 curves, reducing the maximum curvature from 8.7 to 29 ch. radius. The Pennsylvania has placed a contract for similar track improvements and grade reduction between Stubblefield and Marty, Illinois.

Bridge Demolitions

A difficult demolition job has just been completed by the Grand Trunk Western Lines in removing a single-track bridge, 1,300 ft. long, across the Saginaw River at Bay City, Michigan. This removal is incidental to the abandonment of a mile of line opened in 1912, to give access to a station on the east side of the river. The bridge consisted of five 160-ft. through-truss spans, and two 250-ft. through-truss swing spans, on concrete piers which had deteriorated seriously at and below the water line; and the bridge was likely to be endangered further by dredging operations about to be undertaken by the U.S. Government. A similar bridge over the same river at Saginaw also is being removed; this was opened in 1889 and comprises a through-truss span 158 ft. long, a through-truss swing span 194 ft. long, and timber-trestle approaches making a total length of 510 ft.

Lake Michigan Wagon Ferries

A considerable obstacle to traffic passing between the States of Michigan and Wisconsin is embodied in Lake Michigan, which extends for over 300 miles from south to north, and varies in width from 60 to 100 miles. To avoid the lengthy detour around its southern extremity, and the trouble and loss of time occasioned by transfers from one railway to another in Chicago, a wagon-ferry service was established many years ago between ports on the eastern and western sides of the lake. These ferries all are operated from the eastern shore. The Grand Trunk Western Railroad, a subsidiary of the Canadian National Railways, runs the southernmost service, from Muskegon directly across to

Milwaukee; on these ferries the Pennsylvania Railroad has trackage rights. Next to the north is the Pere Marquette Railway, working ferry services fanwise from Ludington to Milwaukee, Manitowoc, and Kewaunee. The most northerly ferries are those of the Ann Arbor Railroad, a subsidiary of the Wabash Railway, from the port of Frankfort to Manitowoc and Kewaunee, through the Sturgeon Bay ship canal to Menominee, on Green Bay, and northwards to Manistique. Some 35 ferry steamers are in use, all of them capable of carrying from 30 to 32 bogie wagons; on most of the routes two double trips are worked daily, each taking from 4 hr. to 7 hr., according to the length of route. Certain of the services also specialise in passenger transport, and provide luxurious accommodation for this purpose.

Derailing the Panama Limited

The derailment on July 13 of the Panama Limited diesel streamliner of the Illinois Central Railroad, recorded in the October 23 issue of THE RAILWAY GAZETTE, was caused by sabotage on the part of a 32-year-old negro track-labourer. He had worked with an I.C. track gang for three weeks before the accident, and previously in 1927 and 1928, but confessed that he had no grievance against the railway; his only object was robbery. The sabotage was carried out with stolen tools. As we stated in our report, in an almost miraculous fashion only the two rear cars of the streamliner, which was travelling at high speed, were derailed, and no more than four persons on board were injured.

SWITZERLAND

Doubling the Gotthard Line

A further stage in the doubling of the remaining single line sections of the Gotthard main line was reached with the bringing into use, on April 30 last, of a second track between Taverne and Lugano, supplementing the doubling already completed from Giubiasco to Rivera, and leaving only the Rivera-Taverne section to complete the double line throughout from Flüelen to Melide, a distance of 97½ miles. Duplication of the single lines in Canton Ticino was mooted as early as 1919-20, and the necessary land was obtained; six years later six underbridges wide enough for double track, and one overbridge, were built to replace previous level crossings, but it was not until 1940 that the actual doubling work was begun, with a guarantee from the Swiss Confederation of one-third of the cost (due to the strategic importance of this route), estimated at fr. 4,700,000. Doubling has been completed this year of 6.54 km. (4.1 miles). It includes a second tunnel at Massagno, 943 m. long; the widening of the deep cutting through which the station at Lugano is approached, where heavy retaining walls have been necessary; two new overbridges, three underbridges, and a subway for foot passengers; and a prolongation of the station tracks at Taverne by 150 m. The new Massagno tunnel, entirely through rock, was begun in the spring of 1940, pierced in November, and opened for traffic exactly a year after commencement; all the traffic then was diverted to it while the old tunnel was being reconditioned through-out and relaid with welded rails, 96 m. (311 ft.) long. Double-line working was brought into operation in time for the train service introduced on May 4 of this year to take advantage of the new facility. Work is now in progress on the doubling of the only remaining single-line stretch in this area, from Rivera-Bironica to Taverne, 5.3 miles.

The German "Austerity" Locomotive

Considerable savings in steel and non-ferrous metals are made in a modified design of the "Series 50" locomotive

CONSIDERABLE publicity was given in the German press on October 13 to the new German war locomotive (*Kriegslokomotive*) which has been produced as a result of an Order made by Hitler in March last. He placed the production of locomotives and rolling stock under the control of the Minister for Armaments & Munitions, and an immediate step was the development of a "transition" locomotive for production until the end of the present year. This was a simplified version of the "Series 50" goods locomotive, arranged to be specially suitable for use in the low temperatures encountered in winter on the Russian Front. The accompanying diagram gives the appearance and dimensions of the "Series 50" locomotive. An illustration of the "transition" locomotive is not available but the new *Kriegslokomotive* is shown in the picture. As mentioned on page 538, the new locomotive is to be mass-produced throughout Germany and German-controlled countries, and is to be classed as "Series 52."

The standard "Series 50" goods locomotive of the German State Railway was the most recently introduced type before the

outbreak of war, and details were included for the first time in the 1939 edition of the handbook issued for the use of the Reichsbahn staff. This engine, which has the 2-10-0 wheel arrangement, is a superheated two-cylinder simple locomotive, of which the leading dimensions are as follow:—

Dia. of cylinders	600 mm. (23½ in.)
Dia. of driving wheels	660 mm. (26 in.)
" leading wheels	1,400 mm. (4 ft. 7½ in.)
Total wheelbase including tender	850 mm. (2 ft. 9½ in.)
Boiler pressure	16 kg. per sq. centimetre (227 lb. per sq. in.)
Grate area	3.9 sq. mm. (43 sq. ft.)
Total heating surface	177.6 sq. metres (1,910 sq. ft.)
Heating surface, superheater	63.6 metres (684 sq. ft.)
Weight in working order (engine only)	86,500 kg. (85 tons)
Adhesive weight	75,000 kg. (73½ tons)
Maximum permissible speed	80 km.p.h. (50 m.p.h.)
Dia. of tender wheels	1,000 mm. (3 ft. 3½ in.)
Water capacity	26 cubic metres (5,720 gal.)
Coal capacity	8 tonnes (7 tons 17 cwt.)
Weight of tender in working order	60,000 kg. (59 tons)

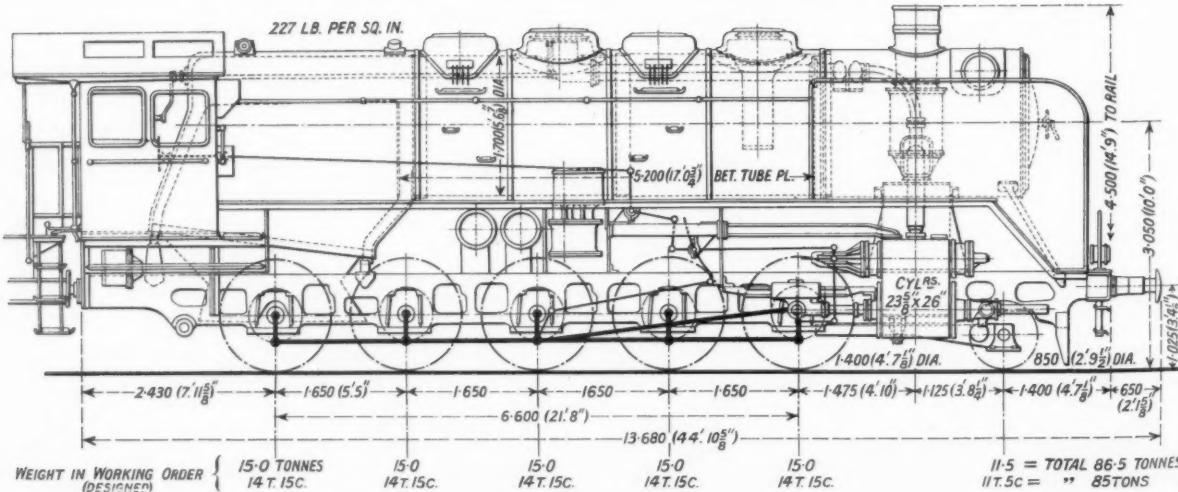
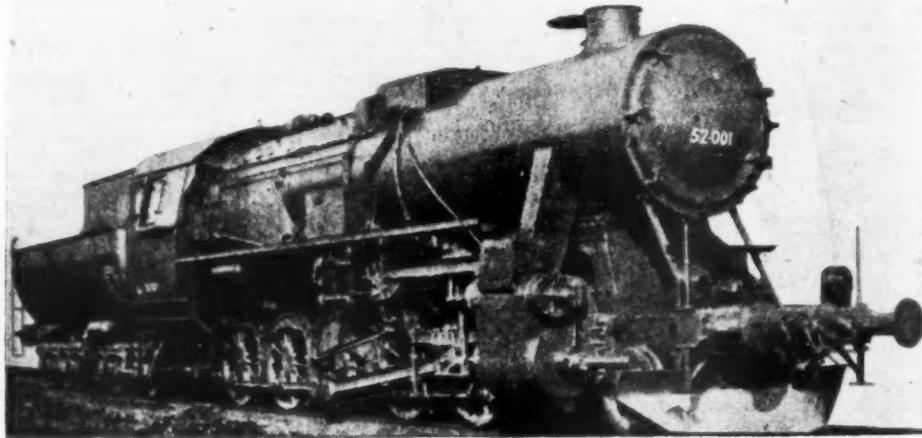
Comparison of the photograph and drawing reveals certain differences between the "Series 50" and "Series 52" locomotives. Many other differences

are not immediately apparent from the illustrations. The following particulars give the changes in design very briefly. Smoke deflector plates on both sides of the smoke-box are missing, in addition to which there are no brackets for the headlamps, no sand box, and no bell. A number of hand rails and handles are also missing. There is, moreover, no feedwater heater, and many other devices not vitally important have also been omitted. The rodding, inclusive of the control and brake rigging, is simplified to the utmost. Of the usual 6,000 components employed in the "Series 50" locomotive, roughly 1,000 have been eliminated altogether, and 3,000 have been modified or altered.

All large-sized components, as, for instance, connecting rods, coupling rods, control rods, that is, almost all reciprocating components as well as brake components, and so forth, have been die-forged, a method which is said to have effected great savings of material and time in manufacture. In comparison with the old construction, the new type represents a saving of 26 metric tons of materials, primarily steel and non-ferrous metals. Also, some 6,000 working-hours are saved. The former type of locomotive, with its tender, required 165 metric tons of steel and other materials, of which 60 metric tons were lost in the machining process. The "War" locomotive, with its tender, (Concluded on page 561)

Right: The first of the new "Series 52" German war locomotive

Below: General arrangement and weights of the "Series 50" 2-10-0 goods locomotive of the German State Railway, introduced in 1939—the basis of the "Austerity" locomotive



Railway Bearing Metals: Their Control and Recovery*

Considerations in the use and recovery of white metal for railway bearings

By J. N. Bradley, A.R.S.M., B.Sc.

A RAILWAY organisation may require to produce 1,500 tons of white metal a year for use on bearings subjected to a variety of working conditions and pressures. Furthermore its policy will probably be to demetal all worn bearings, recover borings and sweepings and renovate the alloys to standard specifications before re-use. In all these operations questions of control, composition, and economy are naturally to the forefront, and in view of the present stringency in the use of tin, the particulars given below may be of interest in connection with the utilisation of national supplies.

Standard L.M.S.R. Bearing Metals

Up to recent years the four alloys specified in Table I have been in use on the L.M.S.R. Mechanical tests of a bearing metal are most instructive when carried out at a normal working temperature. In railway axleboxes this appears to be between 60° C.

respect. Available evidence^{3, 4} suggests that lead base alloys compare favourably with alloys of the 60 per cent. tin type in their resistance to pounding, but unfortunately the former is much more prone to segregation in thick bearings than the latter. Evidence^{5, 6} is conflicting as to their comparative running performance, but apart from dangers of admixture in reclamation it appears that lead base alloys could be employed to a considerable extent.

Metalling Procedure and Bonding Tests

Most of the bearing shells on the L.M.S.R. consist of a bronze containing 7 per cent. tin, 4 per cent. zinc, and 3 per cent. lead, which is machined before its first white metalling. Old bearings are de-metalled and degreased in trichlorethylene but not remachined. The standard procedure for all but the largest bearings is to preheat

ment of the Izod pendulum, and the ft.-lb. to remove the layer of white metal is recorded as the impact adhesion value. It is considered that this test should yield an average impact adhesion value of 23 ft.-lb., that is 30 ft.-lb. per square inch.

Many railway bearings hitherto have been rather thick and the test would require adaptation for thinner metal. With $\frac{1}{2}$ in. deposits a specimen 1 in. $\times \frac{1}{2}$ in. is machined with a horizontal step of $\frac{1}{8}$ in. at the interface and the tool of the striking shoe then rests on this step. For locomotive axlebox shells where the impact adhesion test would mean the destruction of a large bronze casting, another procedure has been devised and consists of shaping away some of the lining so as to leave the projecting square 1 in. \times 1 in. test pads of white metal. These are then sheared from the bronze by static loading in a compression testing machine. Although present practice with bronze shells is to apply metal to a machined surface, it is nevertheless possible to obtain reasonable results on metal in the cast condition. Experiments in this connection were made with test blocks, some of the surface area being machined and the rest being sand blasted, and pickled for 10 minutes in cold acid (2 vols. conc. sulphuric, 1 vol. conc. nitric, 1 vol. water)

TABLE I. COMPOSITIONS AND MECHANICAL PROPERTIES

Alloy		Specification limits and examples				Brinell No. (10/100/15) at 20° C.	Mallock hardness (kg. mm. ²) 21 days load at		Limit of * proportionality lb./sq. in.	Young's modulus E* lb./sq. in. $\times 10^{-6}$		
L.M.S.R. No.	A.R.L.E. No.	Sn	Cu	Sb	Pb		20° C.	130° C.		20° C.	60° C.	130° C.
6H	1N	84.86 85.0	4.6 5.00	9.12 9.73	0.2 max. 0.26	28.0	10.9	2.02	1,500	7.7	7.0	4.6
6J	1R	80.85 81.2	4.6 4.3	8.10 9.8	5.0 max. 4.7	32.3	9.68	1.72	1,061	7.5	6.7	3.4
6K	2R	58.60 58.9 59.1	2.6 2.4 6.2	9.10 9.3 9.8	Dif. 29.4 24.9	23.9	3.58	0.65	Low	4.8	4.3	1.0
—	3R	11.13 11.0	1.0 max. 0.4	12.14 13.0	Dif. 75.6	22.8	8.63	2.09	1,132	4.3	4.2	2.9

* Chosen from results on somewhat similar alloys obtained under special conditions by J. W. Cuthbertson, J. Inst. Metals, 1939, 64, 209

and 80° C.¹ though Pearce² recorded 115° C. in U.S.A. As there is a liability of extrusion effects at elevated temperatures and pressures, creep tests have been made of the four L.M.S.R. alloys. The test-piece chosen was a conical unmachined casting about 0.66 in. high, with an apex angle of 120°. Mallock has shown that the hardness values given by $P_m = 4L/\pi d^2$ (where d is the diameter of the deformed flat), are independent of the applied testing load, and this makes them superior to Brinell numbers for reference purposes. A weight and lever mechanism pressed the specimen against a bearing plate with a load of 200 kg., the alloy was immersed in an oil bath with thermostatic control at 130° C. in one case, and automatic room temperature control at 20° C. in the other. The final Mallock hardness numbers after 21 days' loading, when flow had practically ceased, are reported in Table I.

Lead Base and Medium Tin Base Alloys

It was observed that the specimens 1R, 2R, and 2R (Cu 6 per cent.) which all have their strength undermined by the presence of lead-tin "eutectic," suffer most from creep under the influence of pressure. The lead base alloy No. 3R is therefore superior to the 60 per cent. tin alloy No. 2R in this

the bronze to 250° C.-275° C., flux the surface with solid sal ammoniac or killed spirits, and then immerse the shell for some minutes in a pot containing molten 60 per cent. tin white metal (No. 2R) at about 375° C. The hot tinned shell is next rapidly transferred to a preheated assembly of chills for metalling, and alloy poured in from the pots using the following temperatures:—

Casting temperatures: No. 1N alloy ... 375-400° C.
1R ... "
2R ... "
3R ... 350-380° C.

Chill temperatures: big end chills ... 250-300° C.
other ... 100-150° C.

All engineers are anxious to obtain good bonding between the anti-friction metal and the bearing shell, for inferior adhesion is said to lead to excessive stressing of the white metal and a liability of hot running. A simple chiselling test is only very qualitative for testing adhesion, and for inspection purposes we introduced an impact adhesion test on the L.M.S.R. in 1935 which uses carriage and wagon bearings as samples, and measures the energy required to detach the layer of white metal from prismatic test-pieces machined from the actual bearing. These specimens of $\frac{1}{2}$ in. $\times \frac{1}{2}$ in. section are clamped in the vice of the Izod machine, and a special striking shoe is arranged to engage the thick white-metal layer at a distance of $\frac{1}{2}$ in. above the junction with the bronze. Any machined ridges or grooves in the bronze are arranged to be parallel with the direction of move-

ment by washing in boiling water for 5 minutes and wire brushing.

Impact adhesion tests gave the following results:—

TABLE II. WHITE METAL IN ON BRONZE

Condition of bronze surface	Impact test ft. lb. sq. in.	
	Tested at 16° C.	Tested at 101° C.
Machined	25	14
Sand blasted only ...	24	10
Sand blasted and pickled ...	26	—

Cast Iron Shells and Inferior Bonding

In these days of substitutes the value of grey cast iron as a shell for bearings should not be overlooked. Should the white metal run out the iron backing has reasonably good bearing properties. In Germany during the war of 1914-19 a soft well-annealed hematite iron was used for machine bearings with success, and a Lanz pearlitic cast iron is also said to give good results, as a substitute for bronze. The drilling of pegged holes, or the casting of dovetail holes in the shells are used in practice to anchor the white metal. Better practice consists in anodic etching followed by copper plating and tinning. Most practice endeavours to secure good bonding, but caution must be used to explain a bearing failure on the grounds of lack of adhesion. Thus a zinc base alloy success-

* Abstracts made by Mr. J. N. Bradley, A.R.S.M., B.Sc., from a paper read before the Institute of Metals. Mr. Bradley and Mr. Hugh O'Neill, M.Met., D.Sc., presented the paper; they are members of the L.M.S.R. Research Laboratory, Derby.

fully employed on the old Caledonian Railway was applied to pocketed axleboxes, big end bushes, and so on, without any tinning operation or bonding, and the Swedish Railways consider bonding is unnecessary in carriage bearings.

Thin Linings

The use of thinner linings of bearing metals would result in large economies and would lead to better practice. It is now generally agreed by metallurgists that a thin layer of white metal is superior to a thick one. Published work⁸ shows that fatigue and bending strength are highest in thin metal. For the production of thin railway bearings⁹ the use of a jig and hence more accurately machined bearing shells is desirable. Coupling rod bearings with 1 mm. linings are produced on the Reichsbahn by accommodating two semi-circular bronze carriage shells in a jig communicating with liquid white metal and a cylinder of nitrogen. The latter blows the white metal into the mould and provides a pressure casting effect.

Bearing Failures

It is seldom possible to state with certainty why a standard railway bearing has run hot, since the actual failure destroys most of the evidence. Imperfect lubrication is probably the chief cause. In a hot bearing the more fusible portions of the alloy matrix become extruded from the mass and deposited on the trailing side of the journal.

The surface of a bearing may develop shallow "groove markings" and fatigue cracks, and the latter eventually form the well-known "crazy paving" network. Cavities in the vicinity of the shell junction, especially if adjacent to shell ridges, are liable to lead to cracking of the white metal. If ridges are used, ample radius should be allowed both to facilitate tinning and metallising, and to reduce stress concentrations. Railways have to contend with dust and grit, and Case¹⁰ considers that contamination by dust and grit was one of the causes of excessive bearing trouble in India, and during the dust storms in U.S.A. in 1935 hot boxes trebled in number.¹¹

Reclamation of Scrap—The Bradley Process

Metal melted out from old bearings, together with melting dross, clean borings, and mixed borings of bronze and white metal from the machine shops, are concentrated at Derby Carriage & Wagon Works for renovation. Mixed borings require special treatment and although static or centrifugal liquation treatments successfully recover a large proportion of the white metal, the bronze residue remaining is more or less contaminated. An endeavour to obtain an improved method led to the development of the Bradley* process described below.

At this time powder metallurgy was receiving much attention and the possibility of powdering the more fusible white metal and its removal from the bronze by sieving appeared attractive.

A special rotating drum furnace was designed and made for this work by the Birmingham Electric Furnaces Limited, and employed forced-air circulation and automatic-temperature control. A steel drum, 1 ft. 3 in. dia. \times 3 ft. 6 in. long, rotates inside the furnace proper, and is equipped with two fins 3 in. deep, which are diametrically opposed and extend along its whole length. A drum speed of 20 r.p.m. was found to be satisfactory, and experiments were conducted on charges up to 40 lb. in weight. These were sealed in the

drum and after heating to the set temperature were agitated for a period of about 10 minutes. The internal fins served to lift and drop the charge on to the interior surface of the heated drum, and by this means the white metal was reduced to a fine powder and easily removed from the bronze by sieving.

Separation Conditions for the Bradley Process

White metals may be powdered throughout the solidus-liquidus range, but the best results are obtained by working at an

ingot. Some slight adulteration is inevitable, and this is shown by a rise in antimony and tin contents of the recovered bronze. Recovered borings from the liquation process are tinned, and hence show a more marked difference in composition. Analyses of bronzes obtained from treatment of Alloy 2R mixed borings and also from their liquated residues are given in Table III.

For the complete reconversion of powder to metal it is essential to work at temperatures at which the oil has been largely destroyed and this in practice necessitates

TABLE III

	Spec.	2R bearing metal		Bronze	
		Ex Mixed Borings	Ex Residues	Ex Mixed Borings	Ex Residues
Tin	...	58-60	60.0	60.2	11.1
Antimony	...	9-10	9.7	8.8	0.3
Copper	...	2-6	5.3	6.7	83.1
Lead	...	Diff	25.0	24.3	2.1
Zinc	...	—	Nil	Trace	2.1
Iron	...	—	0.1	0.2	2.7
Undet.	...	—	—	—	0.7
					0.5

optimum temperature for each alloy and within a zone of 5° C. For Alloy 2R the best results are obtained at 200° C., and at this temperature the powder produced will pass a 40-mesh I.M.M. sieve, enabling any charge of mixed borings coarser than this to be treated. The operating temperature for Alloy 1R is 220° C.

Use of "Contaminants"

This name has been given to materials inherently present in consignments of mixed borings, and also to materials intentionally added to charges as aids to separation. Although no cutting lubricant is used in the machining of bearings in the L.M.S.R. shops, oil up to 0.4 per cent. is invariably present in mixed borings. When dealing with rich batches (above 50 per cent. white metal) of Alloy 2R in the discontinuous process, it is desirable to add further contaminants to ensure that no agglomeration of the white metal powder takes place. Many materials would serve for this purpose, but it has been found desirable to confine such additions to cheap and easily fusible materials, and the sodium carbonate-zinc chloride eutectic is suitable.

Not all white metals require the addition of contaminant to facilitate the separation, so that none is required for the high-tin alloy 1R, but an addition is essential when powdering the lead base alloy 3R.

The above plant has now been converted to continuous operation and an output of between 200 and 300 lb./hr. is obtained. Slightly different operating conditions are required which have rendered the addition of further contaminants unnecessary when dealing with mixed borings containing up to 60 per cent. 2R white metal.

Nature of Charges for the Bradley Process

Fine bronze particles will be carried through with the white metal powder unless previously removed by sieving. Charges of high white metal content should be considered for liquation treatment followed by Bradley treatment of the sintered and contaminated bronze, but both the bronze and white metal powder products require renovation to restore them to specification analyses.

The operating temperature is too low to cause any tinning of the bronze borings, and after the removal of the white metal powder by sieving, they may be melted and

about 800° C. being reached. The powder when mixed with 4 per cent. of flux can be melted directly to give bearing metal, and the operation is best carried out in a small reverberatory type furnace. In Table III analyses of No. 2R bearing metal separated from shop consignments of clean mixed borings and liquated residues are given. In general the increased copper content is the only appreciable change.

Limits of Composition and Impurities

The economical limits of composition for recovered white metal are very important under war conditions. During the reclamation of white metal from mixed borings the copper content tends to increase. Laboratory experiments (Table I) indicated that increase of copper at the expense of lead in Alloy 2R raised the static hardness but not the resistance to creep. No hesitation was felt in permitting the specification to be increased to 6 per cent. copper, and the Indian Railway Standard Class I white metal performs satisfactorily at this limit. In lead base alloys copper is generally limited to 0.5 per cent. but the German Specification DIN.1703 for lead base alloy W.M.10 allows a copper content of 1.5 ± 0.3 per cent.

Everybody appears to have been influenced by Archibutt's¹² observations that 0.032 per cent. zinc in renovated alloy 1R modifies the external colour and internal cubic structure of white metal. A.S.T.M. Specification B23-26 limits zinc and aluminium to "none" and the German DIN.1703 imposes maxima of 0.05 per cent. for both. Our own experiments show that 0.025 per cent. zinc can produce a "modification" of the microstructure, but the effect diminishes on remelting. An L.M.S.R. service experiment with carriage bearings of Alloy 2R containing 0.15 per cent. zinc has shown that this amount does not impair normal running. In lead base alloys it appears that zinc contamination is neither desirable nor fatal.

For heavy duty, thin base white metals have their properties undermined if the lead content exceeds about 0.25 per cent. Beyond this limit a network of the easily fusible lead-tin "eutectic" permeates the matrix and facilitates disintegration and smearing during overheating.

(Concluded on page 550)

International Railway Associations—I

Some notes on the work and scope of the various associations concerned with international traffic, principally on the European Continent

REFERENCE to the various forms of international associations which guide or regulate matters of common interest to a number of railway administrations of different nationality, is made in an editorial article at page 540. In the following notes we review the work and scope of the organisations in existence up to the outbreak of war.

Berne Railway Conventions

The railway conventions of Berne are officially called:—

(a) Convention internationale concernant le transport des marchandises par chemin de fer (C.I.M.); and

(b) Convention internationale concernant le transport des voyageurs et des bagages par chemin de fer (C.I.V.).

They are commonly referred to by the initials C.I.M. and C.I.V., and regulate in detail the legal rights and duties of railway administrations, consignors and consignees, and passengers, in international traffic between the member countries, enforced by legislation in each of these countries. The conventions have been concluded between Governments, drafted by Government delegates in conferences which are held at intervals.

A secretariat is maintained in Berne, under the name of the Office central des transports internationaux par chemin de fer, under a *directeur* (manager) with the necessary staff. The costs of maintaining this office are borne by the Governments of the signatory States in proportion to the mileage of railways to which the conventions have been made binding. All countries of the European continent, with the exception of the U.S.S.R., are listed as members, and the mileage of their railways, and railway-operated water and road routes, on which the conventions are in force aggregated on November 1, 1941:

C.I.M.	Rail 245,538 km.	Road 151 km.	Water 559 km.
C.I.V.	196,519 km.	2,409 km.	6,621 km.

The contribution levied from the member States for 1942 was 0.96 Swiss francs per km. of railway for the C.I.M., 0.36 Swiss francs per km. of railway for the C.I.V., and half these amounts per km. of road or waterway. Roads and waterways are included where they are links in regular traffic routes, such as the passenger steamer routes across the Swiss lakes.

The conventions regulate such matters as the legal transport obligation of railways, and its exemptions, the classes of goods for conditional transport and of goods excluded from rail transport in all circumstances, standard forms of waybills, rates and fares limits, routing, packing, time limits for conveyance and delivery, customs, excise, finance, police formalities, payments, loss and damage, and conditions and limits of responsibility, etc.

Some of these matters had been the subjects of a series of conferences held by Government and railway representatives from 1878. As a result of these, a number of private agreements had been made, which finally paved the way for the first international agreement, signed on October 1, 1890, by the delegates of the Governments of Switzerland, France, Italy, Belgium, Holland, Luxembourg, Germany, Austria-Hungary, and Russia. After

ratification in the parliaments of these countries, the convention came into force from January 1, 1893. This convention, henceforth known under the name of the Berne Railway Convention, dealt mainly with goods traffic. Revisions were made from time to time. Two more general conferences were held, in 1896 and 1905, and, after the latter, a revised convention was agreed upon, which became law from September 22, 1908. This was still one convention, dealing mainly with goods traffic.

The war of 1914-1919 put a stop to the general working of the convention, but its provisions were still being observed in countries between which international traffic continued. After the war, most of the member Governments re-introduced the provisions of the convention, but difficulties arose with the financial arrangements through the vagaries of so many of the European monetary systems.

In a new conference held in 1923, the fourth since the original one in 1890, a revision was taken in hand. As a result, the separate C.I.M. and C.I.V. conventions were devised, adopted in 1924, and ratified and brought into operation in 1928 in all European continental countries, except the U.S.S.R. and Turkey. A noteworthy new article was that signatory member States would meet not later than 5 years after revisions decided upon in the last conference had become law.

In accordance with this article a revision conference was held in 1933 in Rome, and its decisions came into operation on October 1, 1938, after ratification by all members except Spain, and for the time being the 1928 convention remains in force in that country. Again in accordance with the new rule, a new revision conference is due in 1943, but the *Office central* has already informed all member countries that it is impossible to call the conference now during the war. The Central Office continues to function, and the provisions of the conventions are still being observed in those countries in Europe, occupied as well as free, which maintain international traffic. A recent example is that Turkey and Bulgaria specified in the agreement on the resumption of goods traffic between the two countries that the C.I.M. would be considered binding.

The Central Office circulates a monthly *Bulletin des Transports Internationaux par Chemins de Fer*, which is also available to outside subscribers.

International Transport Committee

The Berne Conventions are in fact associations of governments, but to supplement them a union of railway administrations was established in 1902, which, at its meeting in Milan, set up the Comité International des Transports par Chemins de Fer, now administered by the Swiss Federal Railways at an office at its Berne headquarters. This union is an executive organ, aiming at unity in the working of the Berne conventions, as applied by the respective Governments to the railways in their countries. The Transport Committee consists of about 30 members, appointed by the railway managements, one to three a country. The committee holds annual meetings, convened by the Swiss Federal Railways, and occasionally meets more

frequently at the request of associated railways. These meetings ceased between 1914 and 1921, and again have not been held since 1939. From its establishment until the outbreak of war in 1914, the secretariat was managed by the Imperial Austrian Railways. The committee was reinstated in 1921 at a meeting held at Lugano, when the Swiss Federal Railways were elected to hold the secretariat.

The committee has devised numerous standards, which have been adopted by the associated railway administrations, concerning such matters as procedure in accepting, forwarding, transferring, and delivering consignments, sharing costs of claims for loss or damage, and notifying train service interruptions. Numbers of recommendations for additions and amendments to the Berne Conventions have also been originated by the committee, and taken over by the Governments in their revision conferences.

International Technical Standards Conferences

The International Technical Standards Conference is an association of Governments concerned with the unification of certain parts of the rolling stock used in international traffic. Les Conférences internationales pour l'unité technique des chemins de fer, to quote the official title, are called from time to time on the recommendation of member Governments, to deal with the requirements for those parts of rolling stock which must conform to certain common standards to allow vehicles and their load to pass from the lines of the owner's system to others. The Governments give by legislation Statutory force to the decisions reached. No international treaties are concluded on the subjects, but the conferences are attended by railway experts from every country, and their recommendations, if approved, are embodied in the legislation of the respective States separately. Structure gauges, loading gauges, buffers, couplings, weights on wheels, brakes, communication circuits between vehicles for lighting, heating, braking, etc., gangways, and similar parts have been standardised within certain general limits.

The first conference was held in Berne in 1882, on the initiative of the Swiss Government, and was attended by representatives from France, Germany, Austria-Hungary, Italy, and Switzerland. It adopted requirements for rolling stock passing between the systems of these countries. A second conference, held in Berne in 1886, was attended by many more countries. Besides adopting further standards, it also regulated a system of customs-sealed wagons in transit through one or more countries. A third conference, again at Berne, in 1907, dealt chiefly with requirements for loading standards of open and flat wagons in international traffic, and for the maintenance of all wagons during their presence on foreign systems. This conference also initiated the setting up of two international committees, one for the drafting of requirements for continuous brakes for goods trains, which completed its work in 1909; the other for the drafting of more complete requirements for the construction of goods wagons to pass through curves of small radii, which finished its task in 1914.

The administration of this association is vested in the Swiss Federal Government. Its principal duty is to call a conference at the request of any of the associated governments and to organise its programme.

Practically all European continental Governments with railway systems mainly of standard gauge are members. Spain, Portugal, the U.S.S.R., Lithuania, Latvia,

Estonia, and Finland, all operating broad-gauge lines, are the only non-members on the continent. The association has issued two books of standard requirements, one on gauge, construction details, maintenance on foreign lines, and loading; and the other setting out a standard procedure for wagons in transit running under seal.

Although no conferences have been held in recent years, exchange of data and views on the subjects covered by the association continued to take place through the intermediary of the Swiss office until the outbreak of the present war.

International Wagon Union (R.I.V.)

In connection with the association of Governments in the International Technical Standards Conferences, the railway administrations in the countries concerned have formed the Union internationale des wagons, commonly known as the R.I.V. (*Regolamento Internazionale Veitori*), for the application of the regulations imposed by legislation, together with such additions as may facilitate the exchange of goods rolling stock in international traffic. It may be considered the operating counterpart to the International Technical Standards Conferences. The union, which was established at an international conference held at Stresa in 1921, is based on the bilateral agreements which were already in existence between a number of neighbour countries up to 1914, in particular between the railways belonging to the Verein Deutscher Eisenbahn Verwaltung.

The union holds 5-yearly meetings, and selects the seat of the secretariat for the ensuing period of 5 years. So far this has been with the Swiss Federal Railways, which have established it at their head offices in Berne. All continental railway administrations to which apply the international rules legislated in the respective countries on the recommendation of the I.T.S.C. are members. The Russian,

Spanish, Portuguese, Finnish, and Estonian Railways do not belong to the union.

The union has issued a "Règlement pour l'emploi réciproque des wagons en trafic international"—hence the initials R.I.V., mentioned above—containing the rules for the common use of wagons in international traffic. The union has a management committee of 7 members, 5 of whom are "permanent" members appointed by the Belgian, French, German, Italian, and Swiss Railways, and 2 are non-permanent members, appointed for 5 years by a vote by systems operating at least 3,000 km. of railways. In all other matters voting rights are exercised by administrations operating 2,000 km. or over, as well as those administrations which have initiated subjects for discussion.

The union has no publication of its own, but notes on interruptions in normal working on any lines or equipment of the systems included in the union are published in the bulletin of the Berne Conventions.

International Carriages & Vans Union (R.I.C.)

In the same category as the International Wagon Union comes the Union internationale des voitures et fourgons—the R.I.C. (*Regolamento Internazionale Carozzi*). It is an older union than the Wagon Union, and not concerned primarily with the International Technical Standards Conferences. It was formed to regulate the international use of through carriages and luggage vans, when the operation of through carriages in international traffic developed, soon after railway systems of the same gauge met at the frontiers. Up to 1889 through running was arranged by separate agreements, but in that year a step forward was made by the Prussian and Bavarian Railways, which jointly invited neighbour administrations to a meeting at Eisenach to adopt certain general standards to facilitate the operation of through carriages

and vans in international trains. From 1889 onward meetings were held regularly, supplementing the timetable conferences which had been begun earlier. At first the meetings were twice yearly, in advance of the introduction of the summer and the winter timetables. Later, from 1911, the meetings became annual, following the lead of the timetable conferences. Annual meetings continued till 1914; they then ceased during the war, but were resumed from 1920, and were held at the same time and the same place as the timetable conferences.

The union's conferences decide on the use of coaching stock in through international trains, and draw up the working tables. In 1923 the union adopted a convention, the Convention pour l'emploi réciproque des voitures et des fourgons en service international—R.I.C.—on similar lines to the rules of the R.I.V. for wagons. Besides regulating the procedure for the interchange of coaching stock, it contains binding standards for the construction and maintenance of rolling stock used in international traffic. A clearing system for payments of rent for foreign stock so used is in force, and a system of code lettering applied to carriages and vans was established to show at a glance on which railways a carriage or van may pass outside the home system.

Members of the union are the continental European standard-gauge main-line systems in all countries. No railways in Spain, Portugal, Estonia, Finland, and the U.S.S.R. are associated. As the use of carriages and vans in international traffic is confined to main lines only, the associated railway members are considerably fewer in number than those of the International Wagon Union. The secretariat has been entrusted to the Swiss Federal Railways, which have established a department at their head offices in Berne to administer the union's affairs.

Large Trestle Viaduct Demolished in One Operation

By weakening the structure and hauling on one end it was felled longitudinally

Some 54 miles, of a total length of 62 miles, of the Wilkes-Barre & Eastern Railroad were closed in 1939 and dismantled in 1940. On this line, which traversed the Pocono Mountains in Pennsylvania, was a large wrought-iron trestle viaduct 1,800 ft. long and with a maximum height of 165 ft. This viaduct was built early in the 1890's and consisted of deck plate-girder spans supported by trestle-tower piers, the corner posts of which were two 12-in. channels back to back founded on masonry pedestals, and well-braced horizontally and diagonally. The principal horizontal members were fabricated from four angles with lattice bars forming a box strut, and the piers were divided into panels or storeys by these members.

The bridge was flanked closely on each side by dense forest growth, and, when demolition became inevitable, it was decided to pull the whole structure down so that it collapsed longitudinally along its own centre line. To demolish it almost wholly in one operation, two spans at one end were first removed and also all horizontal and diagonal bracings from the two lower storeys in each tower. The permanent way, anchor-bolt, and expansion joint connections had been pre-

viously removed and severed with acetylene cutters, respectively.

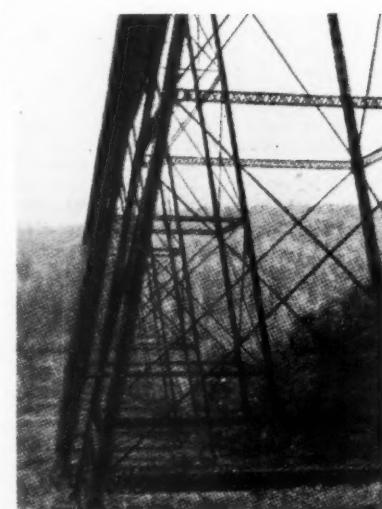
By attaching a steel cable and hauling on it with a hoist mounted on a lorry, it was then a simple matter to cause the greatly-weakened structure to collapse endwise like the proverbial pack of cards. The whole was then cut up on the ground into conveniently sized pieces with acetylene cutters and removed in lorries.

Railway Bearing Metals (Concluded from page 548)

Arsenic is not normally estimated in L.M.S.R. bearing metals, but there is evidence that it hardens the cuboids in tin base white metals, and in lead base alloys it appears to confer valuable properties so that 1 per cent. is introduced in the No. 3 alloy of the Canadian National Railways. Iron is limited to 0.1 per cent. in high tin-bearing metals, but for lead base alloys there is a suggestion that with 0.2 per cent. iron, segregation can be controlled.

REFERENCES

- 1 W. A. Stanier, "General Discussion on Lubrication and Lubricants" (*Inst. Mech. Eng.*), 1937 (1)
- 2 E. S. Pearce, *Trans. Amer. Soc. Mech. Eng.*, 1940, 62, 633
- 3 R. Kühnel, "Werkstoffe für Gleitlager," Berlin, 1939
- 4 H. Greenwood, *J. Inst. Metals*, 1934, 55, 77
- 5 L. Archibutt and R. M. Deely, "Lubrication and Lubricants," London, 1920
- 6 A. H. Mundey, C. C. Bissett, and J. Cartland, *J. Inst. Metals*, 1922, 28, 141
- 7 H. Fowler, *J. Inst. Metals*, 1924, 31, 3
- 8 O. Hummel, *Metallwirtschaft*, 1939, 18, 863
- 9 S. Beifuss, *Z.V.D.I.*, 1936, 80, 1475
- 10 R. C. Case, *J. Inst. Loco. Eng.*, 1939, 29, 708
- 11 A. Graebing, *Braunkohle*, 1936, 35, 613
- 12 L. Archibutt, *J. Inst. Metals*, 1912, 7, 266



The lower storeys of the trestle piers showing bracing and general construction

December 4, 1942

L.M.S.R. 350 H.P. DIESEL-ELECTRIC 0-6-0 LOCOMOTIVES
Record of working at Yard "A" during 1941

Locomotive number	In traffic			
	52 weeks ended 28.12.41		Average per week	
	Hours	Equivalent in days of 24 hr.	Hours	Equivalent in days of 24 hr.
1 7086	7,575	316	146	6.08
2 7087	6,956	290	134	5.58
3 7088	6,831	285	131	5.46
4 7089	6,837	285	131	5.46
5 7090	5,787	241	111	4.62
6 7092	7,079	295	136	5.66
7 7093	7,015	292	135	5.62
8 7094	7,117	297	137	5.70
9 7095	6,810	284	131	5.46
10 7096	6,698	279	129	5.37
Average per locomotive ...	6,870	286	132	5.50

Percentage of time actually "IN" and "OUT" of traffic respectively, compared with total time

Locomotive number	7-day week basis (7 x 24 = 168 hr.)		6-day week basis (6 x 24 = 144 hr.)	
	In traffic	Out of traffic	In traffic	Out of traffic
1 7086	Per cent. 86.71	Per cent. 13.29	Per cent. 100.00	Per cent. 7.11
2 7087	79.62	20.38	92.89	—
3 7088	78.19	21.81	91.23	8.77
4 7089	78.26	21.74	91.36	8.64
5 7090	66.24	33.76	77.28	22.72
6 7092	81.30	18.70	94.54	5.46
7 7093	80.30	19.70	93.68	6.32
8 7094	81.46	18.54	95.04	4.96
9 7095	77.95	22.05	90.94	9.06
10 7096	76.67	23.33	89.45	10.55
Average per locomotive ...	78.64	21.36	91.75	8.25

N.B. "Out of traffic" includes time:—

- (a) Not required for shunting purposes—at week-end and holiday times, or other light traffic periods
- (b) At motive power depot—replenishing fuel, etc., supplies, period and mileage examinations, and undergoing repairs
- (c) At main locomotive workshops—under examination, or undergoing repairs
- (d) Standing during driver's meal period—20 minutes an 8-hr. shift.

Table of results during 1941 of ten diesel-electric locomotives at one depot engaged on flat shunting

with the result that the much greater extent of flat shunting is apt to go unrecognised. Flat shunting consists of forward and backward movement on practically level ground—the majority of movements with wagons are at speeds up to 5 or 6 miles an hour while speeds of up to 10 or 12 m.p.h. are frequently reached in incidental movements during the general process of shunting. The loads pulled or propelled vary very considerably.

Hump shunting consists mainly of propelling trains to a hump where the wagons on reaching the summit are uncoupled into "cuts" and run forward by their own momentum. Propelling speeds vary from 0.5 m.p.h. to 1.75 m.p.h. in practice. Associated with humping there are the movements when the locomotive is running light at speeds up to say 15 or 18 m.p.h. when running round preparatory to humping another train, also movements in sidings closing wagons together, etc.

Example—Yard "A" (Flat Shunting)

This yard is one of the largest on the L.M.S.R. system and comprises a group of separate smaller yards or sections at each of which shunting locomotives have to be employed to split up incoming trains, sort the wagons and marshal them as necessary for outgoing trains. At this place there are no humps. The whole of the shunting is on practically flat ground. The yard is almost completely equipped for carrying out the shunting by diesel-electric units, and the character of certain of the work involves quick movement in order

to maintain connections with and punctual departures of fast freight trains.

There are 12 shunting jobs and although

due to fluctuating traffic and war conditions some of the locomotives may be dismissed and sent to the motive power depot, if not required during certain parts of the weekend the following indicates the normal booked requirements for which shunting power has to be provided to cover the respective workings:—

Working Number	Shunting period involved
1 X.	Continuous 24 hr. daily 7 days weekly
2 X.	" " " "
3 X.	" " " "
4 X.	" " " "
5	6 a.m. Monday to 2 p.m. Sunday.
6 X.	Continuous 24 hr. daily 7 days weekly
7 X.	" " " "
8 X.	" " " "
9	6 a.m. Monday to 2 p.m. Sunday
10	12.30 a.m. Monday to 11.30 p.m. Saturday and 6 a.m. to 7 p.m. Sunday
11	12.30 a.m. Monday to 8 p.m. Saturday and 6 a.m. to 6 p.m. Sunday
12 X.	Continuous 24 hr. daily 7 days weekly

N.B.—In the case of the items marked "X," the locomotives go to shed for refuelling and examination every 12-16 days

Relief has to be supplied during the period when the locomotives have to be in shed for mileage, etc., examinations or for re-fuelling, except to the extent that this can be synchronised with weekend or other periods when not required for traffic. Ten of the diesel-electric 0-6-0 locomotives have been based at this place throughout the whole of 1941. Certain details as to the working throughout that year have been abstracted to show what performance was obtained in actual practice. It should be appreciated that the locomotives are not confined to one shunting job but are switched from one to another according to the incidence of miles run, as they leave the motive power depot after maintenance examination, repairs, and re-fuelling, so that average figures revealed for the 10 locomotives embrace a mixture of the different shunting workings which vary in intensity.

A table is given above showing the hours in and out of traffic respectively for the 52 weeks, with an average a week for each locomotive separately and an average

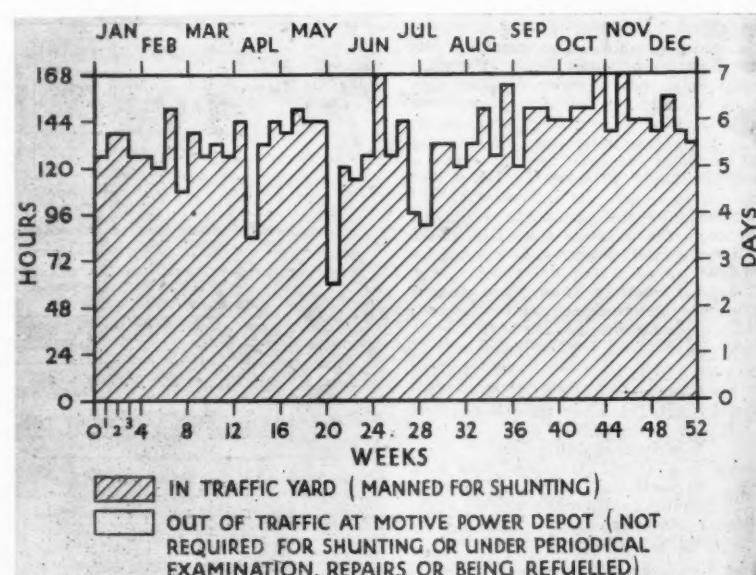


Chart showing hours "In" and "Out" of traffic for one locomotive at hump shunting yard during 1941



Left: Fuelling from oil storage tanks. Right: Locomotive over inspection pit having radiator water topped up from hydrant in six-foot

per locomotive. A brief summary of these figures is given below, together with data as to the fuel oil consumed :—

—	Average per week	
	Hours in traffic	Gal. oil fuel used
Locomotive with highest average	146	298
Locomotive with lowest average	111	213
Average per locomotive for 10 locomotives	132	260

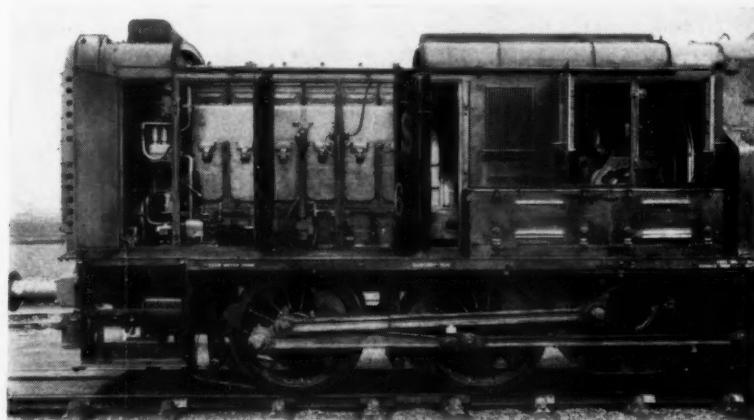
In connection with the locomotive which showed an average of 146 hr. in traffic a week it should be appreciated that to reach this high average there were quite a number of occasions when it was in traffic for longer periods ranging up to 161 hours a week. It so happened, however, that this particular locomotive did not have to be sent away to C.M.E. main workshops during the period in question.

Example—Yard "B" (Hump Shunting)

There are no instances on the L.M.S.R. where a diesel-electric locomotive is confined to hump shunting permanently. At the yards where there are humps there are usually other shunting jobs on the flat, and

the locomotives work round according to the incidence of the miles run and consequently the occasions for maintenance, diesel-electric locomotives are employed continuously for 24 hr. a day performing

propulsion over humps, closing wagons



Close-up with diesel engine uncovered and showing sliding roof open

examinations, and so on. Thus although it may happen that a locomotive continues for several successive weeks on the same job, eventually it is switched over to another. At the yard referred to there are separate up and down humps at which

together in the sorting sidings, miscellaneous re-shunting, and in the case of the down yard drawing certain rafts of wagons from a lower level up an incline on to the arrival lines preparatory to humping.

At the arrival end of the down sidings



Diesel-electric and steam shunting locomotives operating in flat shunting yard

the humping covers the propelling of anything up to 90 wagons, mostly empty, to the hump summit. As this yard is equipped for mechanised railbrake working, the hump is somewhat more pronounced than at a non-mechanised yard. The gradient on the arrival lines approaching the hump fluctuates, but involves starting from rest on a mean rising gradient of 1 in 230 and maintaining humping speed throughout this same rising gradient until the summit is reached. The maximum speed laid down for normal humping is 1.75 m.p.h. Due to differing running characteristics of wagons as the cuts (varying from 1 to 6 vehicles) run off the hump, a "hump slow" signal is provided which is interpreted at 1.25 m.p.h. to indicate to drivers that they must temporarily reduce the speed of propulsion accordingly when cuts are not separating as freely as necessary to ensure the requisite distance between them as they run down into the sorting sidings. The running of these locomotives, therefore, comprises a mixture ranging from very slow propelling speeds round about 1 m.p.h. with heavy loads to faster

speeds not exceeding 20 m.p.h. as when running light from the hump to get to the rear of another train to be humped.

An Individual Analysis

One of the diesel-electric locomotives employed at this yard has been selected at random, and its working during the year 1941 analysed. The chart reproduced on page 552 indicates the periods week by week when it was respectively:—

(a) In the traffic yard, manned for shunting:—

(b) In the motive power depot, undergoing periodical maintenance examination, repairs, refuelling, or not required for traffic purposes at week ends, etc.

The analysis reveals that for the full year the locomotive was in the traffic yard manned for shunting for an aggregate period of 6,979 hr., which is equivalent to 290 days of 24 hr. each. This represents almost 80 per cent. of its time on a full 7-day week basis, and if calculated on a 6-day week basis, it was in the traffic yard available for shunting for 93 per cent. of

its time. These figures take no account of hours when the locomotive was at the motive power depot at weekends available for traffic "but not required." They include, however, 20 min. an 8-hr. shift (1 hr. daily) allowed for drivers' meals during which time the locomotive was standing in the traffic yard. At this particular yard it is not necessary to provide a relief driver to cover the 20 min. meal period, but this would have been done if circumstances justified.

Although this particular locomotive did not, as it happened, have to be sent to C.M.E. main shops during the 12 months under notice, the chart indicates the high degree of continuous availability week by week. The following analysis of the 52 weeks' working indicates the varying nature of the work upon which the locomotive was employed:—

Hump shunting	...	...	...	28 weeks
Flat shunting	...	...	...	10 "
Hump and flat shunting	...	...	...	14 "
Total	...	...	...	52 "

(To be continued)

New Railway Brake Vans in America

Brake vehicles designed to afford comfort and convenience to the crews

SEVEN steel brake vans recently have been placed in service on the Clinchfield Railway, a system operating in North and South Carolina, Tennessee, and Virginia, and one of these is illustrated here-with. The vehicles were built by the American Car & Foundry Company, and are 35 ft. 2 in. long with an inside length of 28 ft. 4 in. and a width of 8 ft. 10 in. The tare weight is approximately 20 (long) tons 17 cwt. The underframe is fabricated of steel plates, and rolled sections, assembled by welding and riveting, and no special dies were required for the pressings. The design of the underframe members embodies ample strength for service conditions.

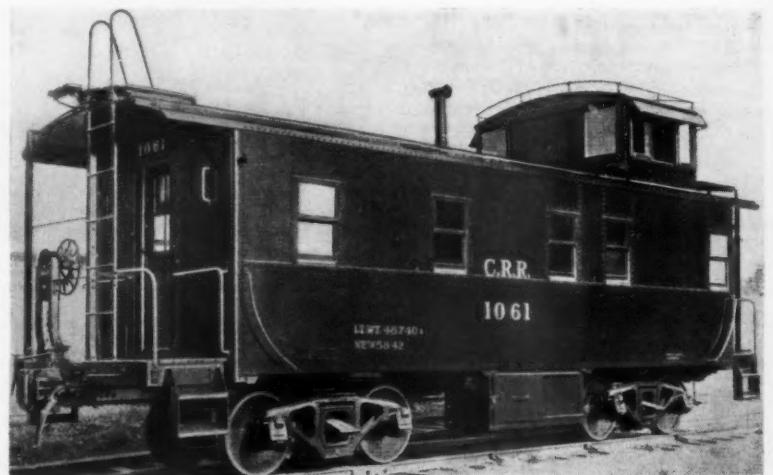
The superstructure is of copper-bearing steel built up by riveting, and double floors consisting of two courses of tongued and grooved yellow pine are provided; both are laid longitudinally, with a layer of $\frac{1}{2}$ in. insulation material coated with waterproofing compound between the two floors. This $\frac{1}{2}$ in. insulation is also applied between the body and cupola lining and framing, and between the ceiling plates and the frame. The end platforms are wider than usual, and extend the full width of the vehicle to the radius of the corner posts; at each end of the platform there is an all-welded two-tread steel step. The interior of the vehicle provides living, working, and sleeping accommodation; the latter comprises on one side two bunks arranged with hinged tops to provide storage space beneath. Cushions 3 in. thick are supplied, upholstered in imitation leather. The cupola seats also have 3 in. thick cushions. A removable table and hinged locker seats are fitted, and adjoining these are the wash-basin, water tank, and water cooler. On the opposite side of the vehicle, next to the cupola space, there is a stove with coal box, also a brakeman's desk, together with lamp and a chair; other equipment comprises a wardrobe and an additional bunk.

The bogies are of the four-wheel swing-motion type with cast-steel side frames having journal boxes cast integrally, and elliptic bogie springs are used. The wheels are 2 ft. 9 in. dia., and the treads of the tyres are ground after mounting on the

axles, which latter have 4½ in. by 8 in. journals. The vehicles are equipped with AB freight-car brakes furnished by the Westinghouse company, and at each end

Ajax vertical wheel-type geared hand-brakes are fitted.

The sides and ends of the vehicles outside are finished with two coats of bright red enamel, stencilled in white in accordance with the standard practice of the railway; the roofs and bogies are painted black. The interior walls, ceilings, and fittings are enamelled in silver grey and the floor is finished in slate colour.



New type of bogie brake van for the Clinchfield Railway, U.S.A.

ENGINEERING CADETSHIPS.—The Ministry of Labour & National Service has decided to modify the conditions of eligibility for the grant of engineering cadetships. (These conditions were given in our November 13 issue.) Under the revised conditions, boys aged 16, 17, 18, and 19 years are invited to apply if they were born in 1923 or 1924, or if, having been born since 1924, they left school before November 1, 1942, or if their notice to leave school at the end of the current term was given before November 1, 1942; they are not employed in any branch of engineering; and have not commenced a full-time course for an engineering degree. The educational qualifications required are, for England and

Wales, a credit in mathematics, or general science, or physics in the School Certificate examination; or satisfactory completion of a three years' course at a junior technical school; or attainment of the necessary standard of knowledge of mathematics, or general science, or physics, for example, as part-time technical students. In Scotland, candidates are required satisfactorily to have completed not less than four years of an approved Senior Leaving Certificate course, and have shown proficiency in mathematics, or science (including physics), or technical subjects; or otherwise, to have reached, for example, as part-time technical students, the necessary standard in one of the three subjects specified.

The
appoi

Mr.
Area,
and w
chang
pany's
a late

Mr.
Advis
Railw
conne
direct
resign
the
resign
accor
year.

The
ing a
Decem

Mr.
in pl
retiri
inten
Mr.
J. W
tende
Mr. F

The
the a
Stati

Mr.
board
Limit
Ltd.,
Ltd.
has b

Mr.
board
Limit
Ltd.,
apoi

Me
Garci
Linco
Thom
been
Percy

Mr.
Indus
Super
Minis

Am
porat
Trans
Assist
Minis
electe
Mr. G
West
Eastw
Nyas
Zamb
Ayres
Jayav
way;
(Ban
Servic
son, I
Carli

RAILWAY NEWS SECTION

PERSONAL

L.N.E.R. APPOINTMENT

The L.N.E.R. announces the following appointment:—

Mr. J. C. L. Train, Engineer, Southern Area, has been appointed Chief Engineer and will be responsible for the civil engineering work of the whole system. Further changes in the organisation of the company's engineering work will be reported at a later date.

Mr. I. Buchanan Pritchard, Chief Legal Adviser of the London & North Eastern Railway Company since 1929, for reasons connected with his health, has asked the directors of the company to accept his resignation of that post. The directors in the circumstances have accepted the resignation with regret and Mr. Pritchard accordingly will retire at the end of this year.

L.M.S.R. APPOINTMENTS

The L.M.S.R. announces that the following appointments have been made as from December 1:—

Mr. W. H. Roberts to be Estate Manager in place of Mr. W. H. C. Clay, who is retiring; Mr. H. Rudgard to be Superintendent of Motive Power in place of Mr. D. C. Urie, who is retiring; and Mr. J. W. Watkins to be Divisional Superintendent of Operation, Derby, in place of Mr. Rudgard.

G.W.R. APPOINTMENT

The Great Western Railway announces the appointment of Mr. H. W. Croft as Stationery Superintendent.

Mr. C. D. Stanley has resigned from the boards of Hants & Dorset Motor Services Limited, the Southern Vectis Omnibus Co. Ltd., and the Thames Valley Traction Co. Ltd. In every case, Mr. R. I. H. Longman has been appointed to the board.

Mr. P. R. Blake has resigned from the board of the United Automobile Services, Limited, and Mr. Arthur G. Dennis has been appointed a Director.

Messrs. J. S. Wills and Kenneth E. Garcke have resigned from the board of the Lincolnshire Road Car Co. Ltd., and Messrs. Thomas Wolsey and J. Howard Mills have been appointed Directors. Mr. William Percy Allen continues to be Chairman.

The Minister of Supply has appointed Mr. F. E. Smith, of Imperial Chemical Industries Limited, to be Chief Engineer & Superintendent, Armament Design, in the Ministry.

Among those elected recently to Corporate Membership of the Institute of Transport is Mr. C. A. Birtchell, Principal Assistant Secretary, Road Transport, Ministry of War Transport; and those elected to Associate Membership include Mr. G. J. Brown, Chief Engineer, North Western Road Car Co. Ltd.; Mr. L. W. Eastwick, Assistant Traffic Superintendent, Nyasaland, Central Africa, and Trans-Zambesia Railways; Mr. A. Hull, Buenos Ayres & Pacific Railway; Mr. S. M. Jayawardana, Ceylon Government Railway; Mr. H. W. Mills, Divisional Manager (Bangor & Anglesey), Crossville Motor Services Limited; and Mr. G. K. Tattersall, Principal Assistant District Controller, Carlisle, L.M.S.R.

Major Frank Gilbert, Assistant Director-General, Supply Services, Ministry of Supply, has been appointed Deputy Chief Officer for Labour & Establishment, Southern Railway. He entered the service of the former London & South Western Railway in 1910, and had a general outside experience before joining Sir Herbert Walker's staff in January, 1914. He served overseas from September, 1914, to April, 1919, and on return to the railway service he held positions in the Publicity, Continental, and Staff Sections of the General

Mr. John Harrad, Assistant Advertising Officer, retired at the end of October after 50 years' service with the London & South Western and Southern Railways. Although his early experience was at stations, and also in the Special Trains Department of the Superintendent of the Line, he has been connected with advertising since 1901, at first under the Superintendent of the Line, and later, in 1912, with the Traffic Department (L.S.W.R.), in which he was given charge of the Advertising Section. In 1913 he held positions in the Publicity, Continental, and Staff Sections of the General



Major Frank Gilbert

Appointed Deputy Chief Officer for Labour & Establishment, S.R.



Mr. John Harrad

Assistant Advertising Officer, S.R., 1938-42

Manager's Office. In June, 1928, Major Gilbert was appointed Secretary to the Railway Staff Conference, and during the next nine and a half years devoted his energies to various aspects of national staff and labour negotiations. He was Secretary on behalf of the railway companies and of the trade unions of the Railway Staff National Council; also of the Special Joint Committee on Machinery of Negotiation for Railway Staff. He was also Joint Secretary of the National Railway Shopmen's Council, and the Railway Police Central Conference. In October, 1937, Major Gilbert returned to the Southern Railway as Chief Clerk in the Office of the Continental Assistant to the Traffic Manager; and in 1939 he became General Assistant to Public Relations & Advertising Officer. Soon after the outbreak of war, he rejoined the Royal Engineers, and held the appointment of Deputy Assistant Adjutant-General at the War Office, with the rank of Major. In March, 1941, he became Controller of Factory Transportation, Ministry of Supply, and in September, 1941, was appointed Assistant Director-General, Supply Services, in the Ministry, in which capacity he has given general assistance to the Director-General, and was responsible for administration matters for the Supply Services Department. He took up his new appointment on December 1.

Mr. John Murray, O.B.E., who retired in 1932 from the position of Assistant Chief General Superintendent, L.M.S.R., is to be High Sheriff of Breconshire for the year commencing next March.

formed and he was made Principal Assistant to the Chief of Publicity; in 1918 he became also Assistant Editor of the *Southern Railway Magazine*. After becoming, in 1926, Chief of the Indoor Section of the Advertising Department, he was appointed Chief Assistant (Publicity) in 1930, and Assistant Advertising Officer in 1938.

At an informal gathering at Waterloo on October 26 the General Manager, Mr. E. J. Missenden, presented Mr. Harrad with the company's Gold Long Service Medal. In addition to the Deputy General Manager, the Public Relations & Advertising Officer, and the Welfare Officer, several of his office colleagues were present.

Subsequently, a number of railway and advertising friends presented Mr. Harrad with a gold wrist-watch, and a brooch for Mrs. Harrad. At this gathering there were no less than three of Mr. Harrad's old chiefs.

It is announced by the Vichy news agency that M. Meroni, Assistant Director of French Railways, is to be Parliamentary Secretary to the Minister of Communications, Vichy Government.

The late Lord Glanely, who had been a Director of the Great Western Railway Company since 1922, and was Chairman of the Tatem Steam Navigation Co. Ltd., and of W. J. Tatem Limited, left £2,067,617.

Mr. Orville Wright, of Dayton, Ohio, has been elected an Honorary Member of the

December 4, 1942

Institution of Mechanical Engineers, in recognition of his distinguished contributions to mechanical science. Mr. Orville Wright and his brother, the late Mr. Wilbur Wright, developed an aeroplane, with wing sections, motor, and controls, which made possible the well-known flight of the former in 1903.

Mr. F. H. Marshall, Goods Agent, Nine Elms, Southern Railway, who, as recorded in our November 13 issue, has been appointed Assistant London District Freight Superintendent, served with the former London & North Western Railway before joining the then South Eastern & Chatham Railway in 1910. After holding the position of Chief Clerk to the London District

duties especially connected with goods train and marshalling-yard operations. In 1931, Mr. Lean was transferred to the Chief Docks Manager's Department, and, after experience in various sections of the Chief Docks Manager's Office, was appointed Assistant Dock Manager at Cardiff & Penarth Docks in 1933. He acted also as Secretary of the Cardiff & Penarth Port Emergency Committee from its inception until August, 1941, when he relinquished his position on being appointed Depot Manager, Inland Sorting Depot, St. Mellons, Cardiff, which post he now leaves on becoming Dock Manager, Plymouth. In 1933, he was attached to a commission, headed by Brigadier-General Sir H. Osborne Mance, which inquired into the condition of the Austrian Federal Railways under the auspices of the League of

Mr. H. C. Johnson, Assistant to the Superintendent (Eastern Section), Southern Area, L.N.E.R., who, as recorded in our November 6 issue, has been appointed Acting Assistant Superintendent (Western Section), Southern Area, was educated at Bedford Modern School, and entered the service of the L.N.E.R. in November, 1923, as a traffic apprentice. After receiving general training in the various departments, he was appointed Assistant Yardmaster, Whitemoor, in 1927; later he served a period of special duty at headquarters before being transferred, in 1932, to the staff of the District Superintendent, Cambridge, as Head of the Control and Trains Sections. In January, 1935, he was appointed to the Superintendent's staff as Chief Controller & Chief Freight Trains



Mr. F. H. Marshall

Appointed Assistant London District Freight Superintendent, S.R.

Goods Superintendent, he went to Bricklayers Arms as Acting Goods Agent in 1917. Mr. Marshall was appointed Goods Agent, Nine Elms, in March, 1929.



Mr. L. J. L. Lean

Appointed Dock Manager, Plymouth, G.W.R.

Nations, and, in 1935, he proceeded to China as member of a commission appointed by the Chinese Government, and headed by Brigadier-General F. D. Hammond, which inquired into the organisation and administration of the Chinese railways. Mr. Lean holds the degree of B.Sc. (Econ.) of London University; he is a Brunel Medallist, and an Associate Member of the Institute of



Mr. H. C. Johnson

Appointed Acting Assistant Superintendent (Western Section), L.N.E.R.

Clerk for the Eastern Section, Southern Area, and, in January, 1938, he returned to Cambridge as Assistant District Superintendent. Mr. Johnson became Assistant to the Superintendent (Eastern Section), Southern Area, in January, 1940.

MR. CHARLES S. LAKE

In connection with the death, recorded in our last week's issue, of Mr. Charles S. Lake, who was a member of the editorial staff of THE RAILWAY GAZETTE from 1917 to 1942, the Editor has received the following letters:

I am very sorry to learn of the recent death of Mr. Charles S. Lake, who was well known to us at the institution for his work in connection with railway literature. His passing will be very much regretted by everyone here who knew him, and the technical world in general will be the poorer in view of the valuable contributions which he made towards the literature on railway transport. I ask you to accept our sincere sympathy in this great loss to your organisation.—H. L. GUY, *Secretary, The Institution of Mechanical Engineers.*

I wish to express to you and your staff my sincere sympathy in the loss you have suffered. Mr. Lake's name was really a household word in locomotive circles. He was so well known, not only in railway circles in this country, but in countries all over the world. A very large circle of locomotive engineers will certainly miss him.—L. J. LECLAIR, *Westinghouse Brake & Signal Co. Ltd.*

Mr. L. J. L. Lean, Depot Manager, Inland Sorting Depot, St. Mellons, Cardiff, G.W.R., who, as recorded in our October 9 issue, has been appointed Dock Manager, Plymouth, was educated at Latymer Upper School and at St. John's College, Cambridge, at both of which he was a Foundation Scholar. After a period of service with the Armed Forces, he read for the History and Anthropological Triposes at Cambridge, of which he holds the degree of M.A.; he was awarded "half blues" for lacrosse and water polo. He then entered the service of the Great Western Railway and was attached to the Superintendent of the Line's Office, in most sections of which he gained experience, and particularly in the train offices, and in the New Works and Rules & Regulations Sections. In 1926 he was attached to the outdoor staff of the Superintendent of the Line, and, among other duties, he conducted enquiries into the economical working of various branch lines. From 1927-29 he was attached to the German State Railway, in connection with a reciprocal exchange of staff, and gained a wide insight into continental methods of railway work in general. On his return to this country he rejoined the Office of the Superintendent of the Line, and for some years was engaged principally in outdoor

We regret that, in our issue of last week, Mr. W. H. Johnson inadvertently was stated to have been Personal Clerk to the late Lord Faringdon, when the latter was Chairman & Secretary of the Great Central Railway Company; the late Lord Faringdon did not hold the position of Secretary.

Mr. Harold Elliott has been appointed Director of Transport, Middle East Supply Centre, with headquarters at Cairo.

Last week we stated that the late Mr. Charles S. Lake had served his time at Melton Constable in the shops of the old Eastern & Midlands Railway, and said erroneously that it was under the late William Marriott. This should have read "under Mr. William Marriott," as we are happy to learn that he is still alive, in retirement. We regret any inconvenience or embarrassment which may have been caused to Mr. Marriott.

Dec

London
Of r
who j
war;
46 in
Japan
each.

The
Som
ceased
contin
Station
ampto
Omnib
pende
Sunda
a thr
tingha
Nottin
August

An
Trans
as clo
men i
colleag
that a
"War
—sen
parcel
pairs
over.
cigaret
as a
84,500
21,000
mitter
and
been
worker
Forces
article

In r
Comm
circula
list of
Royal
times

Aachen
Ahaus
Aldeker
Alt Gaa
Altona
Angerm
Aschers
Augsbu
Aurich
Baden
Barmer
Barnst
BERLIN
Bennbu
Bielefe
Bitterfe
Bobing
Bochum
Bonn
Borkum
Bottrop
BREMER
Bremer
Brunsb
Brunsw
Celle
Coblen
COLOG
Cuxhav
Danzig
Darmst
Delmen
Dessau
Distrol

XUM

TRANSPORT SERVICES AND THE WAR—168

London Transport Prisoners-of-War

Of nearly 20,000 London Transport men who joined the Forces, 300 are prisoners-of-war; 196 are in Germany, 54 in Italy, 46 in unknown camps, and Shanghai, Japan, Rennes, and Manila have one each.

The London-Northampton Coach Survivor

Some weeks after all the others had ceased, one express motorcoach service continued to operate from Victoria Coach Station. This was the London-Northampton service of the United Counties Omnibus Co. Ltd. It has now been suspended, running for the last time on Sunday, November 15. It was formerly a through London-Northampton-Nottingham route, but the Northampton-Nottingham section was withdrawn on August 31.

London Transport "Warco"

An organisation was formed by London Transport in November, 1939, to maintain as close a contact as possible between the men in the Forces and their relatives and colleagues. As soon as news is received that a member of the staff is a prisoner, "Warco"—as it is called (WAR COMFORTS)—sends him, through his next-of-kin, a parcel of knitted wear, comprising two pairs of socks, scarf, Balacava helmet, pair of gloves, pair of mittens, and a pull-over. The organisation also sends 200 cigarettes a month to every man. An additional 300 is being sent to every man as a Christmas gift. Since war began, 84,500 pairs of socks, 21,700 scarves, 21,000 helmets, 30,150 pairs of gloves and mittens, 22,000 body-belts, 510 pullovers, and 6,100 sea-boot stockings, have been made and distributed by "Warco" workers to London Transport men in the Forces—a grand total of nearly 187,000 articles.

Air Raids in Germany

In response to a Question in the House of Commons, the Secretary of State for Air circulated on November 18 the following list of towns in Germany attacked by the Royal Air Force, indicating the number of times each has been visited. The information should be of interest to our readers, as

attacks on transport installations and disorganisation of traffic have formed major objects of the R.A.F. plan of campaign.

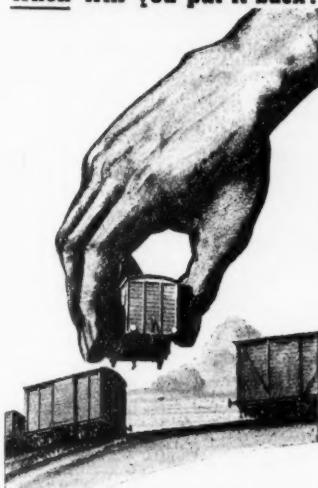
Transport Experiment in Eire

Acute shortages of rubber and liquid fuel caused the Government of Eire to issue last August the Emergency Powers (Mechanically-Propelled Vehicles) (Scheduled Areas) Order, 1942, to facilitate placing all road haulage vehicles operating in specified areas compulsorily under the control of the Great Southern Railways Company, or "authorised persons working in co-operation with the railway." This was briefly recorded in our September 18 issue (page 282), when we announced that the first experimental scheme would be inaugurated on October 1. The scattered country area of North Mayo (north of a line from the coast at Ballycroy to Laherdane, Attymas, and Dromore West) was selected for the initial area. Opposition caused the Minister of Supplies to postpone the introduction of the scheme, and a discussion took place in the Dail. It has now been announced that the arrangements will come into force on December 7.

It is understood that North Mayo was selected for the experimental scheme because it was already subject to grave distribution difficulties. Persons in outlying parts of Mayo have complained that the cutting down of motor transport has meant considerable hardship and privation for those who are dependent upon a regular supply of goods by road. About 80 private commercial vans and lorries now serve the area, and these will be replaced by the G.S.R. service. The railway will open a central goods depot at Ballina, and smaller parcels depots in other towns and villages, and regular collections and deliveries will be undertaken over the whole area. By eliminating overlapping services operated by rival carriers, the G.S.R. hopes to be able to provide a more efficient parcels service at reduced charges. The lorries will take all the goods for each locality and so should be filled to capacity on every run.

Private lorry owners view the scheme with some misgiving and the Irish Motor Traders' Society has issued a statement calling for the re-establishment of competitive road services as soon as the present

It came out of the system;
when will you put it back?



You may not even know or notice that you've kept a lorry or wagon at your loading bay longer than necessary. But think of the huge daily total of wasted time throughout the country. Think of the huge daily total of vehicle-hours lost to the nation. You can stop one of the thousand leakages of vital journey-time by cutting out 10 minutes in each hour of standstill time. Set about the job now, please.

You know your own problems best. Tackle them in your own way. But tackle them now. Plan, encourage ideas, improvise if needs be. Here's a starting-off agenda:

1. CHECKING OFFICE WORKERS
2. PLANNING AND ORGANISING EQUIPMENT
3. BLACK-OUT WORKING
4. ORGANISATION OF "MAN WHO DO THE WORK."

WE MUST GET AN EVEN TURNROUND

New Ministry of War Transport newspaper advertisement in the "Q" campaign

crisis is over. Before the war the Government of Eire took measures to check the unrestricted road transport of goods, in order to help the railway companies, which were in a very serious financial position. At present, the Irish railways would welcome any additional form of transport that would lighten their traffic burden, for scanty coal supplies prevent their running nearly

Town	Attacks	Town	Attacks	Town	Attacks	Town	Attacks	Town	Attacks
Aachen	15	Dollbergen	1	Hage	2	Kloppenburg	2	Nordhausen	3
Ahaus	1	Dormagen	2	Halberstadt	1	Ko-nem	1	Solingen	1
Aldekerk	1	Dorsten	2	Halle	4	Kö-leda	1	Nordhorn	1
Alt Gaarz	1	DORTMUND	39	Haltern	3	Kö-lighofen	1	Nuremberg	4
Altoma	5	Dresden	55	Hamborn	4	Krefeld	21	Oberhausen	2
Angermunde	1	DUISBERG	55	HAMBURG	93	Lastrup	4	Oberndorf	1
Aschersleben	1	Duren	1	HAMM	85	Lauta	1	Ohrermesch	1
Aurich	3	DUSSELDORF	50	Hanau	2	Leipzig	6	Oldenburg	10
Baden	1	Ehrang	13	HANOVER	44	Lem.-de	1	Sterkrade	6
Barmen	1	EMDEN	80	Harburg	4	Leverkusen	4	Stettin	44
Barnstorf	1	Emmerich	12	Hattingen	1	Lingen	5	Osterfeld	3
BERLIN	53	Eschwege	5	Heerd	1	Lipstadt	2	Ostermoor	3
Bernburg	2	Eschweiler	1	Heide	1	Lubeck	9	Ottersberg	1
Bielefeld	5	Esens	1	Heidelberg	1	Ludwigshafen	19	Paderborn	5
Bitterfeld	3	ESSEN	49	Heilbronn	1	Lü-en	1	Pilsen	4
Böblingen	1	Euskirchen	3	Herdecke	2	Maideburg	23	Recklinghausen	2
Bochum	1	Finkenheerd	1	Herrnringen	3	Mainz	3	Regensburg	2
Bonn	5	Flensburg	8	Hildesheim	2	MANNHEIM	56	Rendsburg	5
Borkum	19	Frankfurt-on-Main	35	Hitzacker	1	Mannheim	1	Rheine	9
Bottrop	7	Frankfurt-on-Oder	1	Hochst	2	Merzig	1	Rheinfelden	1
BREMEN	101	Freiburg	1	Holtenau	2	Misburg	6	Rheydt	7
Bremerhaven	20	Friedrichskoog	1	Homberg	1	Monheim	11	Riesenbeck	1
Brunsbüttel	6	Furstenau	1	Homburg	13	Mö-s	2	Rostock	5
Brunswick	2	Geldern	6	Huntlosen	2	Müheim	3	Rotenburg	3
Celle	3	GELSENKIRCHEN	42	Husum	1	Munich	4	Rotha	2
Coblenz	13	Geseke	1	Ibbenburg	4	Münster	21	Rudelsdorf	1
COLOGNE	110	Gifhorn	2	Jena	1	Mutterstadt	1	Ruhrort-Hafen	2
Cuxhaven	17	Gladbach	7	Julich	2	Neckarau	1	Rummelsburg (Berlin)	1
Danzig	2	Goch	1	Kamen	6	Neheim	1	Saarbrücken	4
Darmstadt	2	Göttingen	3	Kassel	10	Neuhaldensleben	3	Salzbergen	5
Delmenhorst	2	Gotha	3	Kiel	70	Neumünster	2	Salzhof	1
Dessau	4	Gremberg	8	Kiel	70	Neuss	2	Schönebeck	1
Distrik (Distrik/Hastenrath W. of Duren)	1	Grenenbroich	2	Klingenberg	4	Nienburg	1	Siedenburg	1
					2	Nohra	2	Schwerte	1
					2	Nordenham	2	Siegburg	2
								Zwickhausen	2

December 4, 1942

enough trains to meet the demand. Compared with normal times, there are now about 3,000 fewer lorries on the roads. The G.S.R. monopoly of road transport in North Mayo is considered the best method of giving an efficient service with the least possible consumption of petrol and tyres. It is probable that some of the private lorries, together with the staffs of the firms, will be taken over by the railway as part of its organisation.

If this scheme works satisfactorily, it will be extended to other districts. The underlying idea—to eliminate all competitive transport and ensure that lorries reach every part of the area—is really the same guiding principle as has already been applied to passenger services in Eire. There is but one train a day on the main lines, and no Sunday services, while buses are so scheduled and routed as to eliminate all competition with trains. (See editorial note, page 538.)

Italian Train Cuts

From November 18, 40 Italian passenger trains were suspended, according to a Rome dispatch to the Vichy News Agency.

Bulgarian Fare Increases

Heavy German troop movements through the Balkans are cited as the reason for an 80 per cent. increase in Bulgarian railway fares, designed to reduce civilian travel, according to a B.U.P. message from Ankara dated November 22.

Loading Premiums in Germany

Accounts have been published in the German press recently of the operation of a new system for the payment of premiums on the early return of goods wagons. The reason for the payment is that the return of a wagon in less than the allotted time, which has already been curtailed drastically, makes necessary additional effort and expenditure. A premium is not paid in every instance, however, but only when a firm has been informed by the superintendent of the goods yard that the early return of the wagon is required to make possible the early dispatch of a goods train.

In order to prevent the earning of premiums by unloading and loading some wagons quickly and thus recouping fines for keeping other wagons longer than is allowed, a firm may not receive a premium if it has been fined during the same period. Where a premium has been promised, but

the Reichsbahn cannot eventually dispatch the wagon early, the premium is paid nevertheless.

The Reichsbahn admits that the system is not altogether fair, as not all goods can be unloaded or loaded easily, and some firms will never be able to earn premiums, but in recent weeks it has been proved to the satisfaction of the German authorities that the general effect of the system is good.

As the premium is a reward for efficiency, it is expected to be given to those immediately responsible for the performance. The General Controller of Labour has instructed the Reich Trustees of Labour that permission should be given for the payment of premiums to workers, and that no objections should be raised on account of the limitation-of-wages rules.

New Types of German Goods Wagons

In addition to the "wartime" locomotive in Germany, new types of goods wagons and of guards vans have been developed, in which all non-essential parts are omitted, and modifications and alterations in other parts have resulted in savings of materials, labour, and time. The new types of rolling stock are painted grey, instead of the German standard red for goods wagons and black for guards vans. In future, only two types of standard wagons are to be built, namely, a covered wagon 12 metres (39 ft. 4 in.) long, to be used also as a refrigerator wagon, and an open type with stanchions. The construction of these new types enables an average of 35 per cent. of materials to be saved, and effect a reduction of about 25 per cent. in working hours. These types of wagons have been evolved jointly by the German wagon-building works.

Double Tracking in Roumania

The second track on the 91 km. (57-mile) (Bezeu-Marasesti) section of the Bucharest-Cernauti main line was completed and brought into service on August 1 last. There is now a double track all the way from Bucharest as far north as Adjud, 244 km. (151 miles), the sections Bucharest-Buzeu (69 km. (43 miles)), and Marasesti-Adjud, 25 km. (15½ miles), having been double for a number of years past. The Adjud-Marasesti section, together with the adjoining Marasesti-Tecuci section of 19 km. (12 miles), had been doubled with a view to accommodating the timber traffic from

the Transylvanian Razboieni-Adjud line to the port of Galatz. Marasesti-Tecuci is, of course, a part of the main line to Jassy.

At present, the Bucharest-Cernauti is one of the most heavily-worked main railway lines in Roumania, over which all the direct traffic between Bucharest and Germany runs, via occupied Poland. The other communications between the two countries lead through Hungary.

The Bucharest-Cernauti and Bucharest-Jassy routes are used by two of the three international express trains now running on Roumanian metals, namely, the Bucharest-Lwow-Krakow-Berlin express, and the Bucharest-Chisineu-Odessa express. The latter is scheduled at an overall time of 21 hr. 37 min. for the journey from Bucharest, and 23 hr. 47 min. for the return journey. The only other express in the country is the Bucharest-Budapest-Berlin train, which uses the Timisoara main line in Roumania.

Romanian Rate and Fare Increases

Railway goods rates in Roumania are to be increased from November 15. The last increase, amounting to 25 per cent., came into force on June 1, 1941. Before that there were three increases within a comparatively short time, totalling 27 per cent. The new increase is 40 per cent., covering all direct and combined rates in a uniform way, and thus including transit, import, and export consignments (except firewood, for which the present rates remain in force until March 1, 1943). For the time being, the increase is not to affect the combined Roumano-German rates, although some of them, namely those from or to Roumanian frontier stations in conjunction with Roumanian inland rates, will actually be increased from November 15.

Passenger fares are to be increased by 15 per cent. from January 1, 1943.

Railways in Dutch East Indies

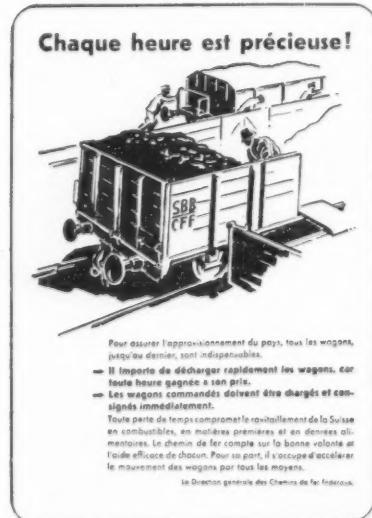
The Japanese military authorities have installed a unified civilian railway administration for all the Java State and private railways, and have ordered new tariffs to be introduced forthwith.

Japanese Road Schemes in China

Japanese schemes envisage the modernisation of 9,315 miles of roads in occupied northern and north-western China. This programme is in addition to the new roads which have been completed in those regions in the past five years. A motor road between Port Arthur and Newchwang on the Gulf of Liao-tung was opened in 1937 connecting at the latter point with the Mukden-Peiping motor road; its extension from Peiping to Chang-kia-kow (Kalgan) is now under construction. Motor roads opened in various other mountain regions in northern and north-western China are stated to total about 930 miles. The road connecting Hong Kong with Canton and Macao is said to have been covered with a cement layer. The five-year road scheme for Manchuria, involving the construction or modernisation of 12,420 miles of roads, will be completed by the end of the current year, according to Japanese reports.

Alaska Railway Development

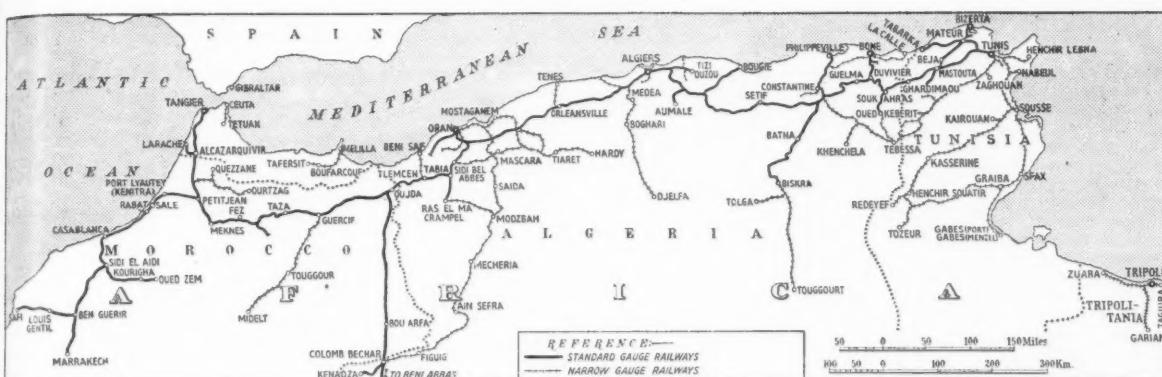
The Alaskan Defence Command headquarters has announced the completion of two railway tunnels which are said to shorten the route between Seward and Anchorage by 52 miles; one tunnel is stated to have been driven through 4,000 ft. of rock. It is probable that this cryptic message (for the Seward-Anchorage section is but 114 miles long) refers to the proposed line to a new port on Prince William Sound intended to replace Seward (as described in our issue of October 24, 1941, page 408). This will make possible the



Recent newspaper advertisements of the Swiss Federal Railways from "La Tribune de Genève." The similarity of appeal between these and the comparable British and German announcements will be noted



La Direction générale des Chemins de fer fédéraux.



Above: The railways of Morocco, Algeria, and Tunisia



Right: The railways and main coastal road of Libya

abandonment of some 64 miles of railway from Seward to Portage, when about 12 or 14 miles of new line are completed between Portage and the new port.

Oil for Canadian Locomotives

The *Calgary Albertan* stated on October 9: "Fifty oil wells may be drilled in the Vermilion field of Alberta by the Canadian National Railways in an effort to obtain more supplies for the company's oil-burning locomotives, according to strong rumours current in Canadian oil circles."

The Pan-American Highway

The four main roads which constitute Argentina's part of the Pan-American Highway system are all open to traffic, and much has been done toward improving and surfacing.

Argentina's link with Chile is almost completed. The distance of 1,114 km. (692 miles) from Buenos Aires to Mendoza is paved, and the remaining 119 km. (74 miles) to the frontier have been riprapped.

One large section of the main artery to Bolivia still requires construction work, but the remainder has been improved and basic construction completed.

The road to Paraguay is now paved as far as San Justo, approximately 100 km. (62 miles) north of the city of Santa Fe.

The fourth of the international routes, and the one receiving preference at the moment, is to Brazil direct. A large part of the work has already been completed. A tender was recently accepted for the construction of a bridge which will cross the River Uruguay at Paso de los Libres and join the two countries. The bridge is expected to be completed in 2½ years, and the highway approaches should be finished at the same time.

The expenditure in Chile for construction, maintenance, and repair of roads amounted to 143,888,639 pesos (about \$7,428,429) during 1941. This money was used in the upkeep of 27,469 km. (17,070 miles) of roads and 5,075 metres (5,550 yd.) of bridges; the construction of 1,052 km. (654 miles) of roads and 3,653 metres (3,678 yd.) of bridges; and the improvement and repair of 3,363 km. (2,090 miles)

of roads and 2,601 metres (2,845 yd.) of bridges.

Construction is now under way on the highway from Santiago to Concepcion, a road of 540 km. (335 miles) which will have no level crossings.

Middle East Supply Centre

With the appointment of Mr. Frederick Winant, brother of the U.S.A. Ambassador in London, as Chairman of the Executive Committee of the Middle East Supply Centre, a new type of United Nations agency has been completed. The centre has been working since the spring of 1941, and was a purely British affair until the spring of this year, when American ships, American supplies, and American manpower came to mean so much to the Middle East that United States civil and military representatives took their places in the centre. Mr. Winant will sit on the Supply & Transportation Sub-Committee of the Middle Eastern War Council, which controls the broad policy of the centre. An American military representative, Colonel Clabaugh, will also sit on the executive committee. Further American civil representatives are taking up appointments within the centre as members of the staff. From now on, representatives of the U.S.A. and Great Britain will take turns to be chairman of the executive committee one year and vice-chairman the next. The British authorities will now work side by side with their American colleagues in arranging food and supplies for a population of nearly 80,000,000 in an area larger than the United States.

Before the war, a large part of the supplies of these Middle East countries went across or through the Mediterranean by routes now closed, and the task of the Supply Centre is to meet these needs with the least possible claims on shipping, by helping to make the area self-supporting. Civilian and military programmes have to be dovetailed to economise shipping. The centre will be linked with London, as in the past, through the Ministry of War Transport, and will work in close touch with Mr. R. G. Casey, the Minister of State. It will be linked with Washington through

the State Department and the Office of Lend-Lease Administration. Mr. Harold Elliott has been appointed Director of Transport, Middle East Supply Centre, with headquarters at Cairo.

American Troops as Dockers

It may now be disclosed that, during the summer, under arrangements made by the Ministries of War Transport and Labour in co-operation with the trade unions, American soldiers worked side by side with British dockers in several ports, to gain experience and to study the dockers' methods. Thousands of American troops who are now engaged in discharging ships on the North and West African coasts received their first training in handling cargoes in British ports. General Lee has now sent a letter to the Minister of War Transport from the Headquarters of the Services of Supply, European Theatre of Operations. After expressing to all concerned his deep appreciation of the co-operation extended to the U.S. Army in training troops for discharging operations, General Lee continues: "These battalions who, at the time of their arrival in this country were untrained in the handling of marine cargoes, are now actively engaged in the operations in North and West Africa, and, thanks to the experience gained by them in the actual discharging of ships here, I am confident that they will render an excellent account of themselves." The Minister of War Transport has asked the Regional Port Directors concerned to convey General Lee's message to both employers and men, with an expression of his own thanks.

War Specials

During November, the L.M.S.R. ran its 50,000th special train for the Fighting Services since the outbreak of war. These specials have played important parts in many Allied activities, such as the evacuation from Dunkirk, the expedition to Norway, the occupation of Iceland and Madagascar, the North African campaigns, the supply of tanks and weapons to Russia, and the conveyance of American contingents.

December 4, 1942

Questions in Parliament

Overloading of Railway Wagons

Sir Robert Rankin (Liverpool, Kirkdale—C.) on November 25 asked the Parliamentary Secretary to the Ministry of War Transport, whether he was aware that the managers of some railway goods yards and particularly those in the Liverpool district were habitually overloading railway wagons, thereby causing waste of fuel, damage to rolling stock and locomotives, and unnecessary delays; and whether he would cause the railway companies to put a stop to this practice.

Mr. Noel-Baker: I am not aware that railway wagons are being overloaded as Sir Robert Rankin suggests; but if he will let me know which goods yards he has in mind and will provide me with information which will enable me to identify the wagons, I will make enquiries.

Cheap Fares

Mr. R. W. Sorensen (Leyton West—Lab.) on November 25 asked the Parliamentary Secretary to the Ministry of War Transport how many representations had been received respecting the abolition of cheap fares and return fares at slightly reduced rates; whether any further consideration was being given to this matter; whether the matter was open to review after an experimental period; what action was to be taken respecting any increased income on any transport service due to the abolition of previous facilities; and whether the latest hour for ordinary workmen's tickets would be raised to 8.30 a.m.

Mr. Noel-Baker: The decision to withdraw the ordinary cheap day tickets and other cheap tickets for various classes of pleasure travel on the railways was taken in order to reduce unnecessary travel, and thus to help the railways to deal with the present very heavy essential traffic of passengers and goods. So long as the present difficult transport conditions continue, I can hold out no hope to Mr. Sorensen that the decision will be reversed. I have received about 120 communications on the subject, of which 28 were from representative bodies. The purpose of the measure is to reduce revenue, by reducing traffic. If, however, any increased revenue should result, it will accrue to the Exchequer, through the operation of the Railway Control Agreement. In answer to the last part of the question, I would refer Mr. Sorensen to the answer I would have given to-day to a question by Mr. Frankel (Mile End—Lab.) if he had been in his place.

Mr. Sorensen: Although entirely appreciating both the motive and purpose of the reduction in facilities, may I ask whether the Parliamentary Secretary would not reconsider this matter at an early date, in view of the apparently quite legitimate requests and complaints by those using transport in London at the present time? Would he be prepared to receive a deputation on this matter?

Mr. Noel-Baker: I am always ready to receive deputations, and I would certainly receive one in this case, which is, I admit, one of great difficulty. I would not like to hold out any hope that the general abolition of cheap fares put on originally in order to encourage travel off the peak hours could be reconsidered, but on the particular question of extending the time for ordinary workmen's tickets I am giving that the closest attention and I will let Mr. Sorensen know the result of the deliberations of my Department.

Mr. D. Frankel (Mile End—Lab.) on November 25 asked the Parliamentary

Secretary to the Ministry of War Transport whether in view of the hardships involved in the withdrawal of 1s. day tickets and the system of return fares in the London area, he would consider extending the issue of workmen's fares to the petrol-driven buses and the issue of workmen's tickets on all the services of the London Passenger Transport Board and suburban railways to a later hour in the morning.

Mr. P. J. Noel-Baker in a written reply stated: As I explained to Mr. Frankel on November 10, the 1s. day ticket was available after 10 a.m. Its withdrawal has, therefore, no bearing on the question of workmen's tickets. I am, however, looking again into the matter raised in the latter part of the question and will let him know the result as soon as possible.

Fuel Economy on Railways

Sir Robert Rankin (Liverpool, Kirkdale—C.) on November 24 asked the Parliamentary Secretary to the Ministry of War Transport whether he would cause the railway companies to appoint full-time fuel economy officers in each of the main works and in the region of the line to act in collaboration with the executive officers concerned and with the wardens in each shop and set of premises.

Mr. P. J. Noel-Baker: To secure the utmost economy in the use of fuel by the railways, the general managers have personally accepted responsibility for applying all the necessary measures. I hope and believe that this will prove to be the most effective way of carrying out the purpose which Sir Robert Rankin has in view.

Pooling of Locomotives

Mr. J. Parker (Romford—Lab.) on November 25 asked the Parliamentary Secretary to the Ministry of War Transport if a locomotive pool, analogous to the wagon pool, had yet been formed to meet the varying needs of different sections of the main-line railways.

Mr. P. J. Noel-Baker in a written reply stated: Locomotives cannot be used in a common pool, as wagons can. Arrangements have, however, been made both for the joint working of locomotives, and for the transfer of locomotives from one railway company to another, when this is required. Under these arrangements large numbers of locomotives have been transferred since 1939 and considerable economies in motive power have been obtained.

Requisitioned Motor Tyres

Captain L. D. Gammans (Hornsey—C.) on November 18 asked the Minister of Supply what arrangements he was proposing to make to compensate owners of motor cars whose tyres were requisitioned; and whether he was prepared to give a guarantee of priority for new tyres to such owners when rubber again became available.

Commander O. Locker-Lampson (Birmingham, Handsworth—C.) on November 18 asked the Minister of Supply whether motorists whose tyres were confiscated would receive preferential treatment when rubber again became more plentiful; and whether he would consider issuing a certificate when the tyres were requisitioned which would receive some form of priority after the war.

Sir Andrew Duncan (Minister of Supply): All requisitioned tyres will be examined by valuers on behalf of the Ministry of Supply, and compensation will be payable in accordance with the provisions of the Compensation (Defence) Act, 1939, having regard to their age, condition, and type. It is not possible to give a guarantee of priority now in respect of tyres which have been

requisitioned. Future distribution must depend on the circumstances at the time.

Worn Tyres

Rear-Admiral T. Beamish (Lewes—C.) on November 24 asked the Parliamentary Secretary to the Ministry of War Transport when it was his intention to introduce legislation imposing penalties on users of commercial vehicles who surrendered tyres which had been worn to an extent which unfitted them for re-treading; and whether he was aware that the necessity for such legislation had been, for some months, generally agreed to by the Ministry of Supply, Tyre Control.

Mr. P. J. Noel-Baker in a written reply stated: My Ministry, in conjunction with the Ministry of Supply and other Departments concerned, are now considering the adoption of an Order which would make it an offence to use a pneumatic tyre on any vehicle or trailer, if the cotton or other similar fabric of the tyre were visible.

Road Accidents

Sir Adam Maitland (Faversham—C.) on November 19 asked the Parliamentary Secretary of the Ministry of War Transport if he could give a short statement of the major causes of road accidents during the last year; and if statistics were available of deaths caused by head-on collisions, dangerous or negligent driving, or any special reason which had contributed to the heavy casualties still experienced in road transport.

Mr. P. J. Noel-Baker (Joint Parliamentary Secretary, Ministry of War Transport) wrote in reply: I regret that I have no statistics which show the causes of road accidents during the past year. I am arranging to be furnished with more details of the road accidents which occur during the forthcoming winter months.

Producer-Gas Vehicles

Mr. J. R. Leslie (Sedgefield—Lab.) on November 25 asked the Parliamentary Secretary to the Ministry of War Transport what progress had been made with respect to producer-gas traction in view of the utilisation of coke and the saving of petrol.

Mr. P. J. Noel-Baker: Gas-producer units for public service vehicles are in production and are being allocated as they become available to selected public service vehicle undertakings. Plans for the production of units for goods vehicles are well advanced and deliveries on a quantity production basis are expected early in the new year. The fuel used will be almost entirely anthracite of a defined specification, but the possibility of using a wider range of fuels is under continuous review. Mr. Leslie will be glad to know that on October 30, 1942, there were on the roads of this country 1,383 vehicles operating on producer gas.

Road Traffic Beacons

Sir Stanley Reed (Aylesbury—C.) on November 25 asked the Parliamentary Secretary to the Ministry of War Transport whether a decision had been reached as to the removal of traffic beacons, especially those which, having lost their globes, were a double menace to pedestrians during blackout hours.

Mr. P. J. Noel-Baker: As the Parliamentary Secretary to the Ministry of Works & Buildings explained in answer to questions on February 3 and October 7 last, the total amount of iron which could be obtained by removing the beacons is only about 1,000 tons, and it would be compara-

tive is n
Sec
que
of se
in t
M
with
a g
req
stre
Si
fair
thes
inv
M
easi
High
M
Nov
Secr
wha
mot
econ
reduc
M
with
Min
Powe
Min
publ
servi
ger a
high
Broa
Soci
also
camp
and
driv
but
rub
this
that
seri
excep
busi
Mi
Parli
activ
Mr
being
Sir
Will
speci
to S
50 m
Mr
very
com
Liver
Mr
Lab.)
ment
Trans
large
cleani
vehic
Trans
were
to 7 a
engag
were
night
tion f
ensure
be su
night
under
or oth
Mr.
unders
Depot
during
to 7
will se

must be collected. For this reason, it is not at present proposed to remove them.

Sir S. Reed: Will the Parliamentary Secretary consider that this is not merely a question of the recovery of a certain amount of scrap but a serious menace to pedestrians in the blackout?

Mr. Noel-Baker: I have great sympathy with that aspect of the matter, but there is a great shortage of labour, and it would require a lot to get these beacons out of the streets.

Sir Joseph Lamb (Stone-C.): But is it fair that garden gates should be taken while these are left, even if the total amount involved is only 1,000 tons?

Mr. Noel-Baker: Gates are very much easier to remove.

High-Speed Driving by Motorists

Mr. D. L. Lipson (Cheltenham-Ind.): On November 25 asked the Parliamentary Secretary to the Ministry of War Transport what steps he had taken to impress upon motorists the need to drive more slowly to economise in petrol and rubber, and to reduce the number of road accidents.

Mr. P. J. Noel-Baker: In co-operation with the Ministry of Information, the Ministry of Supply, the Ministry of Fuel & Power, and the Service Departments, my Ministry have endeavoured, by widespread publicity, to induce private motorists, service drivers and drivers of heavy passenger and goods vehicles to avoid driving at high speeds. The assistance of the British Broadcasting Corporation and the Royal Society for the Prevention of Accidents has also been obtained. The purpose of this campaign is to bring home to all operators and drivers of road vehicles the fact that driving at high speed is not only dangerous, but also exceedingly wasteful of fuel and rubber. I am grateful to Mr. Lipson for this opportunity of explaining once again that the fuel and rubber situation is very serious, and that to drive at high speed, except on urgent Government or Service business, is most unpatriotic.

Mr. Lipson: Are the measures which the Parliamentary Secretary has outlined being actively pursued?

Mr. Noel-Baker: Yes, sir. They are being intensified month by month.

Sir Francis Fremantle (St. Albans-C.): Will the Parliamentary Secretary take special note of the motorcyclists belonging to Service Departments, who travel at 50 m.p.h. and over?

Mr. Noel-Baker: Service drivers have very strict instructions from their own commanders.

Liverpool Transport Night Workers

Mr. B. V. Kirby (Liverpool, Everton-Lab.) on November 24 asked the Parliamentary Secretary to the Ministry of War Transport whether he was aware that a large number of men were employed for cleaning and maintenance purposes in the vehicle depots of the Liverpool Passenger Transport Department; that these men were on permanent night duty from 11 p.m. to 7 a.m. all the year round; that those so engaged in the Smithdown Road depot were unable to secure hot meals during the night, in spite of their having made application for them, and would he take steps to ensure that in future such workers would be supplied with hot meals during each night from one of the existing kitchens under the control of the education authority or otherwise.

Mr. P. J. Noel-Baker wrote in reply: I understand that at the Smithdown Road Depot there are on the average 18 men during the night shift, that is, from 11 p.m. to 7 a.m. There is a mess room which will seat about 25, and there are facilities

for boiling water. These arrangements are the same as those at all the other nine depots of the Liverpool Corporation Transport Department. The transport department has no record of application being made to provide hot meals at this or any other depot between the hours of 11 p.m. and 7 a.m. I understand that the education authority is unable to provide hot meals anywhere between these hours.

Jamaica Railway Employees' Union

Mr. R. W. Sorensen (Leyton West-Lab.) on November 25 asked the Secretary of State for the Colonies whether any further action had been taken to restore the legality of the Jamaica Railway Employees' Union; what action had been taken against those members of the union alleged to have engaged in subversive activity; and what was the precise nature of their offence.

Colonel Oliver Stanley (Secretary of State for the Colonies): The Authorised Associations Regulations were cancelled by the Governor of Jamaica on November 19, and trade unions are now free to resume their former status with the assurance of the Jamaica Government's recognition, and sympathy with their legitimate activities. The members of the Jamaica Railway Employees' Union referred to were detained in the public interest under Regulation 18 (1) of the Jamaica Defence Regulations, 1940, which corresponds to Regulation 18B of the United Kingdom Defence Regulations. As to the last part of the question, I am awaiting a further despatch from the Governor about the reasons which led to the detention of these persons.

Mr. Sorensen said that the reply would give great satisfaction both here and in Jamaica, by reason of the fact that the Railway Employees' Union was now legal. He asked if the Minister could say when the report concerning the alleged subversive activities would be available to the House.

Colonel Stanley said he could not say when he would receive it.

Women Staff at a Southern Railway Goods Depot

Six hundred women are employed at one of the Southern Railway's large goods depots in the London area, out of a total staff of 1,600. During the latter part of the war of 1914-19, a number of women was employed at this depot on various light duties, but work in such areas as shunting yards and wharf sides was performed entirely by men. At the present time, however, women are engaged in nearly every sphere of activity, and in many cases they are performing very heavy work.

Since the first was engaged in March, 1941, the women have been given as far as possible positions of their own choice. At first a policy was pursued of starting them on light duties and of allowing them to become accustomed to progressively heavier tasks; but this arrangement was altered later, as the women made it clear that they considered themselves as being there to do men's work, and that they were more than willing to live up to this idea from the commencement of their employment.

Three women now are working as drivers of electric cranes, and another has been trained as machine operator in the granary, also a skilled job. One is employed as a stablewoman, and takes her turn with stablemen, who have many years of experience, in the grooming and

feeding of over 150 horses. The remainder are occupied in a large variety of occupations, comprising those of lorry driver, horse carter, checker, loader, porter, roper, wagon stocktaker, wagon number-taker, weighbridge worker, van-setter, sheeter, timekeeper, vanguard, office porter, office cleaner, messenger, wagon-oiler, rail point-oiler, and clerk.

About 80 per cent. of the women are married, and the husbands of many are serving with the Armed Forces. A large number have children, many of whom have to be looked after in day nurseries while their mothers are working. The general welfare, health, and conditions of work of the women are constantly under review by Miss Laxton-Lloyd, the Southern Railway Welfare Supervisor for Women, and her staff.

THE GERMAN "AUSTERITY" LOCOMOTIVE

(Concluded from page 546)

needs only 140 metric tons of materials, of which 40 tons are lost in the machining process. The greatest saving of materials is obtained in the construction of the tender, because the weight of the locomotive has not been allowed to go below a certain minimum on account of the requirements of adhesion and tractive power. Substantial savings were made in the use of non-ferrous metals; the original type of locomotive embodied seven metric tons of copper, the "transition" type only 2.8 metric tons, and the "War" type has only 220 kg. (484 lb.) of copper. The old type of tender with a completed weight of 24 metric tons required 40 metric tons of materials, whereas the new type with a completed weight of 18 metric tons absorbs 26 metric tons of materials. On the other hand, the capacity of the tender has been increased. It is 34 cu. m. (1,200 cu. ft.) of water and 10 metric tons of coal in the new type as compared with 26 cu. m. (918.2 cu. ft.) and 8 metric tons in the earlier type.

It is claimed that special constructional methods (which all locomotive works are now organising) will enable a locomotive of the "war" type to be completed in half the time required for one of the original type. In view of the extensive manufacturing facilities available the output is expected to be very high. The new locomotives will be finished in unvarnished blue-grey, instead of in the familiar German livery of black with red wheels.

WADDON COLLISON INQUEST.—On November 18, Dr. H. B. Jackson, Coroner for Croydon, concluded his inquest on the body of the Southern Railway Company's motorman, Mr. P. A. F. Mason, who was killed when his train, the 6.15 a.m. from Croydon to Wimbledon, ran into the rear of the 5.34 a.m. London Bridge-Epsom train standing in Waddon Station, on November 4, in a thick fog.

A verdict of "death by misadventure" was returned. This section of line is worked by Sykes lock-and-block, with the L.B.S.C.R. form of instruments, and the apparatus was found to be in order after the accident. Evidence was given to show that a telephone message about the condition of the section and the working of the electric semaphore block-indicators at West Croydon had passed between that box and Waddon, and that the train for Wimbledon was accepted correctly by the signalman at the latter station; he admitted overlooking the Epsom train while it was waiting there; he imagined it had gone forward.

Notes and News

Chesapeake & Ohio Railroad Company.—Regular quarterly dividend of 75 cents and an extra 50 cents.

Guest Keen & Nettlefolds Limited.—Unchanged interim dividend of 4 per cent. on the ordinary stock.

Electrification of Neuchâtel-Verrières Line.—Reuters reports that the first electric trains were operated over the line from Neuchâtel, in Switzerland, to Verrières, on the Franco-Swiss frontier, on November 22 last.

Brown Bayley's Steel Works Limited.—The directors are maintaining the final ordinary dividend of 8 per cent., tax free, again making 13 per cent., tax free, for the year ended July 31, 1942. Net profit is given as £114,972 (£92,216).

G.I.P. Railway Annuities.—It is notified in accordance with the provisions of the Great Indian Peninsula Railway Purchase Act, 1900, that on November 2, 1942, a total sum of £24,837,139 was invested for the purpose of providing a sinking fund in respect of Class "B" Annuities.

Associated Equipment Co. Ltd.—Net profit, subject to final audit, for the year ended September 30, 1942, after depreciation, taxation, fees, and general expenses, was £141,500 (£132,500), and £268,000 was brought in. The final tax-free dividend of 1s. per unit of stock, or 5 per cent., makes the total tax-free dividend for the year 1s. 6d. per unit, or 15 per cent., the same as for the previous year.

Czechoslovak Exhibition in London.—The third of a series of exhibitions for the Allied nations was opened on behalf of Czechoslovakia by Mr. Jan Masaryk, on November 30, at the Berkeley Street office of Thomas Cook & Son Ltd. In addition to the exhibition, films were shown depicting various aspects of the effect of the war on Czechoslovakia. The exhibition will remain open on weekdays until December 12, from 9 a.m. to 4 p.m. (9 a.m. to 12 noon on Saturdays), and the films will be shown daily (except Saturdays and Sundays) from 2.15 to 3.15 p.m.

Barsi Light Railway Co. Ltd.—Gross receipts for the year to March 31, 1942, were Rs. 22,09,310 (Rs. 22,48,396), and working expenses Rs. 10,96,194, or 49.62 per cent. of gross earnings, against Rs. 10,53,280, or 46.84 per cent. Passengers numbered 1,214,765, a decrease of 24,560, and the 190,956 tons of goods traffic showed an increase of 2,973, and produced receipts of Rs. 11,92,646, which were Rs. 24,538 higher. Net revenue and appropriation accounts show a total available of £68,632, of which £1,929 is required for preference dividend and £32,864 for the two interim ordinary dividends, totalling 4½ per cent. for the year. The directors have set aside £16,000 (same) to taxation reserve and £3,995 (£4,531) to renewals, leaving a balance of £13,843 (£13,477) to be carried forward.

Transport Today and in the Future.—Mr. P. J. Noel-Baker, M.P., Joint Parliamentary Secretary, Ministry of War Transport, attended the November meeting of the Northern Section of the Institute of Transport at Newcastle-on-Tyne, when Mr. A. S. Buswell, District Passenger Manager, Newcastle-on-Tyne, L.N.E.R., projected seven films dealing with transport and subjects of topical interest. In the course of a short speech, Mr. Noel-Baker

paid a tribute to all engaged in transport, who, he said, were doing an imposing job in defeating our enemies. Out of this war we should learn that transport was a great public service, however it was organised. Co-ordination was required, but if all pulled together there was enough work for all. He concluded by expressing appreciation of the work of the institute; he wished it well and said that in the days to come it had a great contribution to make to the well-being of the community and the happiness and prosperity of the world.

American "Austerity" Locomotives.—The first shipment of American-built locomotives of a new type, for service in this country and overseas, has arrived in England. The locomotives are described by the Ministry of Supply as being of an "austerity" type and are of a simple design facilitating rapid construction; they are fitted with both vacuum and Westinghouse brake apparatus. The shipment was unloaded in the presence of Allied Army officers and Ministry of Supply officials.

Railway Benevolent Institution Casualty Fund.—The Railway Benevolent Institution announces that its casualty fund collection is being made, and that subscriptions will be received by any stationmaster or agent, from whom particulars are available. A subscription of 1s. secures a return of about 3s. 6d. a week during a period of disablement due to accident, up to a maximum of five. A sum of £5 will be paid to the widow of a member killed, and of £3 to the widow of a member dying from natural causes, during the year of membership. Benefits are paid irrespective of other income. No claims can be admitted which arise out of present hostilities.

Peruvian Corporation Limited.—Mr. Oliver R. H. Bury, presiding at the 52nd annual general meeting on November 19, said that the gross receipts in currency of the railways and steamers for the year had reached a record total which was 1,680,000 soles more than in the previous highest year 1927-28. Restriction of shipping and other war influences had increased the traffic from and through Peru to Bolivia. This traffic, which was carried by the Southern Railway and lake steamers at the increased rates referred to last year, was mainly responsible for the improved receipts from these two services. Road competition had slackened due to the difficulties of maintenance of road vehicles. Working expenditure had increased, mainly due to the heavier traffic movement and to the still rising cost of essential materials, the principal among which was the higher cost of fuel. Because of the rising cost of living, wages had been increased, mainly in the lower grades of labour. The services of the rail buses had been of the utmost value in dealing with the increasing passenger traffic and were proving to be a very economical form of transport. The steamers had carried a record traffic in the face of difficulties resulting from the continuous fall in the level of Lake Titicaca.

Pullman Car Co. Ltd.—Sir Follett Holt, Chairman & Managing Director, at the ordinary general meeting of the company on December 2, said that since he addressed the company last year he was glad to say that no further war damage had been done to the company's cars or property, but in May last, by Order of the Minister of War Transport, practically all the cars together with the buffet cars belonging to the railways were withdrawn from service, and

they now relied for revenue only on the compensation agreed to be paid by the railway companies. This could be used only to meet the outgoings of the company and to strengthen its financial position so that it might be able to resume activities at the conclusion of the war. Progress had been made to this end. The obligation to repay the £100,000 4½ per cent. debenture had been met and they had accumulated cash and investments to the extent of £48,956. All expenses had been reduced to a minimum but they were obliged to keep the workshops in action so as to give all possible

British and Irish Railway Stocks and Shares

Stocks	Highest High 1941	Low Low 1941	Prices	
			Nov. 27, 1942	Rise/ Fall
G.W.R.				
Cons. Ord. ...	43½	30½	57	+ 1
5% Con. Pref. ...	109½	83½	112½	—
5% Red. Pref. (1950) ...	105½	96½	107	—
5% R. Charge ...	129½	116	130½	—
5% Cons. Guar. ...	128	110½	126	—
4% Deb. ...	113½	102½	114	—
4½% Deb. ...	115	105½	114½	—
4½% Deb. ...	121½	112	119½	+ 1
5% Deb. ...	132	122	131	—
2½ Deb. ...	70	62½	75½	—
L.M.S.R.				
Ord. ...	17½	11	26½	+ 1½
4% Pref. (1923) ...	53	33½	62½	—
4% Pref. ...	68½	48½	75½	—
5% Red. Pref. (1955) ...	97½	77	102½	+ 1
4% Guar. ...	100	85½	101½	—
4% Deb. ...	105½	97	108½	+ 1½
5% Red. Deb. (1952) ...	110½	106½	107	—
L.N.E.R.				
5% Pref. Ord. ...	32	23	7½	—
Def. Ord. ...	2	1½	4½	— ½
4% First Pref. ...	52½	33	60½	+ 1
4% Second Pref. ...	19½	10	30	—
5% Red. Pref. (1955) ...	79½	52	95	—
4% First Guar. ...	90½	74½	96	—
4% Second Guar. ...	80½	59	88½	+ 1
3% Deb. ...	79½	68½	83	—
4% Deb. ...	104	91½	106	—
5% Red. Deb. (1947) ...	106	102½	103½	—
4½% Sinking Fund ...	103½	99½	104½	—
Red. Deb. ...				
SOUTHERN				
Pref. Ord. ...	65½	43½	75	—
Def. Ord. ...	2	1½	22½	+ 1
5% Pref. ...	107	77½	110	—
5% Red. Pref. (1964) ...	107	89½	108½	—
5% Guar. Pref. ...	128	111	126½	+ ½
5% Red. Guar. Pref. ...	114½	107½	112½	—
(1957)				
4% Deb. ...	112	102½	112½	—
5% Deb. ...	130½	119	130½	+ 1
5% Red. Deb. (1962-87) ...	108½	102	109½	—
4% Red. Deb. (1970-80) ...	108½	102½	109½	—
FORTH BRIDGE				
4% Deb. ...	99½	90	107	—
4% Guar. ...	99	85	103½	—
L.P.T.B.				
4½% "A" ...	120½	109½	118	—
5½% "A" ...	130½	115	128	—
4½% "T.F.A." ...	103½	99½	101	—
5% "B" ...	117	102	118½	—
"C" ...	46½	28½	55	—
MERSEY				
Ord. ...	24½	19½	26	+ ½
3% Perp. Pref. ...	58	51	59	—
4% Perp. Deb. ...	100	90	99½	- 2
3% Perp. Deb. ...	73½	63	78	—
IRELAND				
BELFAST & C.D. Ord. ...	4	4	9	—
G. NORTHERN				
Ord. ...	14½	3	26½	+ ½
G. SOUTHERN				
Ord. ...	14½	5	20	—
Pref. ...	17	10	25½	- ½
Guar. ...	44	16	48½	- 2½
Deb. ...	61	42	68	—

OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster London, S.W.1.

OFFICIAL NOTICES

London & North Eastern Railway

NOTICE is hereby given that, for the purpose of preparing the warrants for Interest on the Company's 3 per cent. and 4 per cent. Debenture Stocks and 4½ per cent. Sinking Fund Debenture Stock for the half-year ending 31st December, 1942, the balances will be struck at as the close of business on 11th December, and Interest will be payable only to those Stockholders whose names are registered on that date.

Transfers of the above-mentioned Stocks should, therefore, be lodged with the Registrar of the Company at Hamilton Buildings, Liverpool Street Station, London, E.C.2, before 5.0 p.m. on 11th December.

By Order :
P. J. DOWSETT
Secretary.

Marylebone Station,
London, N.W.1.
1st December, 1942.

attention to the cars. Some cars were under cover but the greater part were standing in the open exposed to the effects of heat, cold, rain, and rust, and would require a great deal of renovation when peace came. With the continuance of the goodwill of the railways, the company would face the future in good heart and they all looked forward to the re-assembling of the staff and the resumption of the company's activities.

Tilling Motor Services.—The nominal capital of Tilling Motor Services Limited has been increased to £2,100,000. It consists of 200,000 10 per cent. cumulative shares of 10s. each, and 4,000,000 ordinary shares of 10s. each.

Bengal & North Western Railway Preference Stocks.—Notice is given that, subject to the resolution for winding up the company being passed at the extraordinary general meeting called for December 31, the 3½ per cent. preference stock and the 4 per cent. second preference stock are to be paid off at par on January 4 next.

Antofagasta Railway Scheme of Arrangement.—A meeting of holders of the 5 per cent. debenture stock of the Antofagasta (Chili) & Bolivia Railway Co. Ltd. was held on November 24 at Winchester House, E.C., to consider resolutions approving the scheme of arrangement and also the appointment of a new trustee. In the absence of the necessary quorum the meeting was adjourned until December 15. There were, however, sufficient stockholders present to pass the resolution authorising the appointment of a new trustee.

Antofagasta (Chili) & Bolivia Railway Co. Ltd.—The directors announce that they are unable to provide the whole of the £383,220 required for the repayment of the £306,576 of 5 per cent. debenture stock outstanding, which is due for repayment at a premium of 25 per cent. on January 1 next. Stockholders are asked to agree to a scheme providing for the payment of the premium on January 1, and discharge of the principal money by purchase or drawings over the next ten years. It is pointed out that as no interest is payable on the premium, stockholders will suffer no reduction of income.

Cordoba Central Trust Limited.—The revenue account for the year to June 30, 1942, shows a credit balance of £80,025 after deducting expenses and interest on the 3½ per cent. first debenture stock. Out of this balance an interim payment on the "B" debenture stock of 1½ per cent. was made on June 15, 1942, and it is proposed to make a further distri-

bution of 2½ per cent. on this stock on December 15, leaving a balance of £2,657 to be carried to the credit of undivided revenue. The total distribution on the "B" debenture stock for the year to June 30 last is thus 4½ per cent. (4 per cent.), subject to tax. During the financial year under review £205,373 of first debenture stock was redeemed and cancelled, reducing the amount outstanding to £6,991,184.

Bus Industry Reorganisation.—The assets of Tilling & British Automobile Traction Limited have now been transferred to the two new companies under a reconstruction agreement dated August 20. This became effective on September 30, 1942, and the actual transfer deeds were executed shortly after that date. The assets are now in the hands of B.E.T. Omnibus Services Limited and Tilling Motor Services Limited. The resultant changes in the boards of directors of the operating companies have been recorded during the past few weeks in our Personal columns.

English Electric and Napier Deal.—The English Electric Co. Ltd. it is announced, is offering to acquire the issued ordinary capital of D. Napier & Son Ltd., aero-engine manufacturers and general engineers, on the basis of £1 English Electric ordinary stock for every five 'Napier 5s. ordinary shares. The offer is conditional on acceptance by December 28 by holders of 75 per cent. of Napier issued ordinary shares, or such lesser proportion as the English Electric Company may agree to accept. The Napier directors have accepted the offer and recommend their ordinary shareholders to do the same. If the deal goes through the Ministry of Aircraft Production will purchase for £750,000 certain fixed assets acquired by Napier to expand output, and will lease them to the company for the duration of the present emergency.

Winter Strain on Transport.—At a recent meeting of the Yorkshire Section at Leeds, Mr. E. W. I. Arkle, Assistant Goods & Passenger Manager, North-Eastern Area, L.N.E.R., delivered an address on "Some Effects of the War on the Transport Systems of the Belligerents." He showed how there had been much consistency in the effects of war on the transport of all the countries concerned, and drew some interesting parallels with experiences in the war of 1914-19. The principal achievement of this war had been the much greater progress in traffic planning and route allocation. Mr. Arkle thought that the transport systems of all the belligerents would be put to a very severe strain during the coming

Now on Sale

Universal Directory of Railway Officials
and Railway Year Book

48th Annual Edition, 1942-43

This unique publication gives the names of all the principal railway officers throughout the world together with essential particulars of the systems with which they are connected. Much general and statistical information about railways is also concisely presented.

Price 20/- net.

THE DIRECTORY PUBLISHING CO., LTD.,
33, Tothill Street, Westminster, S.W.1

winter, only by tremendous efforts on the part of the transport providers, and by the complete co-operation of the users, could better results than those of our enemies be shown in the next six months.

The Oudh & Tirhut State Railway.—It has now been announced in India that the Bengal & North-Western Railway and the Rohilkund & Kumaon Railway, both of which become the property of the Government of India after the end of this month, are to be amalgamated as from January 1, 1943, and known as the Oudh & Tirhut Railway. Both are metre-gauge lines. The B. & N.W.R. now operates 2,088 miles, including the 783 miles of the Tirhut State Railway. The R. & K. system comprises 688 miles.

Contracts and Tenders

The Egyptian State Railways have placed the following contracts :—

Thomas Chatwin & Company : Dies.
Nuckey Scott & Company : Hand taps, etc.
Arthur Balfour & Co. Ltd. : Profile tools, etc.
Caprotti Valve Gears Limited : Valve setting shims.

The Consolidated Pneumatic Tool Co. Ltd. : Drilling machines.
Skeko Ball Bearing Co. Ltd. : Roller bearings.

Buck & Hickman Limited : Wire gauge.
John Rabone & Sons Ltd. : Scales.
Belliss & Morcom Limited : Brass packings and valve spindles.

Walter Jones & Sons Ltd. : Dynamotors.
National Gas & Oil Engine Co. Ltd. : Top scraper rings.

Ruston & Hornsby Limited : Piston rings.
Dewrance & Co. Ltd. : Dewrance patent hexagonal packing rings.

The Morgan Crucible Co. Ltd. : Carbon brushes.
Herbert Terry & Sons Ltd. : Springs.

Clyde Crane & Booth Limited : Spares for coal transporter.

Babcock & Wilcox Limited : Spares for Babcock & Wilcox boilers.

Laurence Scott & Electromotors Limited : Copper brushes.

Allen West & Co. Ltd. : Copper contacts.

B. & S. Massey Limited : Catgut pull cords.

I.C.I. (General Chemicals) Limited : Spare parts for Cassel's cyanide furnace.

Clyde Crane & Booth Limited : Motor extension shafts.

Babcock & Wilcox Limited : Mud drum blow down valves.

Thos. Firth & John Brown Limited : Segmental type saws.

Arthur Lyon & Company : Magnet gears.

Falk Stadelmann & Co. Ltd. : Glass bowls.

W. Canning & Co. Ltd. : Hydrometers.

Turret Grinding Wheel Co. Ltd. : Grinding wheels.

Oliver Manufacturing Co. Ltd. : Zinc tape.

Railway Stock Market

Business in Stock Exchange markets remained on a modest scale, but the general undertone has been firm. Absence of selling, the firmness with which all classes of securities have continued to be held, and other factors indicating confidence in the future, assisted market sentiment. Moreover, it is being assumed that, over a period, the trend in values is likely to be upwards, because of the weight of money seeking investment. There has been firmness in British Funds, partly due to re-investment of the December 1 interest payments and the terms of the new 2½ per cent. National War Bond issue. Home railway securities provided the brightest section of markets; yield considerations attracted steady demand, with the result that there has been general improvement in junior stocks. Moreover, prior charges fully maintained recent gains; it was realised that under the wartime financial agreement, investment merits have been, in effect, increased, because interest payments can be considered virtually guaranteed by the Government.

Favourable yields continue to be shown by L.N.E.R. guaranteed issues and also by L.M.S.R. guaranteed, and the senior preference stock of the latter railway yields over 5½ per cent. Elsewhere, L.M.S.R. 1923 preference yields fully 6½ per cent., and the return on L.N.E.R. first preference is rather higher than this.

In fact, the last-named stock would appear to be undervalued in relation to both L.M.S.R. 1923 preference and Southern preferred, judged not only on current yields but also on the cover for dividend requirements under the financial agreement. There has been increased activity, not only in L.N.E.R. second preference, which continues to be the subject of market talk of the possibility of a fractional improvement in the dividend, but also in this railway's preferred and deferred issues. The latter stocks cannot be expected to receive any payment under the financial agreement, but speculative attention has been given to the preferred on the market view that its full 5 per cent. dividend would be available if any post-war arrangement were based on the revenue figures of the 1921 Railways Act. Argentine railway securities remained out of favour; the annual results of B.A. & Pacific provided a further illustration of the many difficulties which make profitable working impossible. It is pointed out that, if the Argentine authorities do not give the British-owned railways operating in that country a reasonable measure of relief, it will be impossible to establish necessary reserves for the post-war rehabilitation of permanent way and rolling stock. There have been, however, various bright features among other South American railway securities, particularly the further rise in Havana stocks under the influence of the decision of the

Havana Terminal subsidiary to bring payments up to date on the 5 per cent. debentures, which was in excess of general expectations. Sentiment as to Leopoldina debentures was assisted by the announcement of a six months' arrears payment.

Among individual movements, Great Western has risen further to 57½ at the time of writing, which compares with 56½ a week ago; the 5 per cent. preference was firm at 112½, as were the 4 per cent. debentures at 113½, and the guaranteed stock at 126. L.M.S.R. ordinary improved further on balance from 25½ to 26½; the senior preference remained at 75½, and the 1923 preference was half-a-point better at 62½. At the time of writing, L.N.E.R. first preference has remained at 60½, but the second preference rallied further from 29½ to 30½. Moreover, L.N.E.R. deferred and preferred were higher at 43 and 88 respectively, but elsewhere, the second guaranteed eased slightly to 88. In other directions, Southern preferred eased from 75½ to 75, but the deferred improved on balance from 21½ to 22½; the 4 per cent. debentures were 112½, and the guaranteed preference stock was higher at 126½. London Transport "C" was better at 55½.

Elsewhere, United of Havana debentures at 39 were three points higher on balance, and after the announcement of the six years' interest payment, Havana Terminal debentures were marked up.

Traffic Table and Stock Prices of Overseas and Foreign Railways

Railways	Miles open 1941-42	Week Ending	Traffic for Week			Aggregate Traffics to date			Shares or Stock	Prices						
			Total this year	Inc. or Dec. compared with 1941	No. of Weeks	Totals		Increase or Decrease		Highest 1941	Lowest 1941	Highest 1941	Lowest 1941			
						This Year	Last Year									
South & Central America																
Antofagasta (Chili) & Bolivia	834	22.11.42	£ 25,020	-	47	£ 1,003,470	£ 915,650	+	£ 87,820	Ord. Stk.	10½	3½	10	Nil		
Argentine North Eastern	753	2.11.42	13,191	+	200	283,920	246,395	+	37,524	6½	1	6	Nil			
Brazil	174	Oct., 1942	6,400	+	2,780	44	47,139	38,504	+	8,635	6 p.c. Deb. Bonds	5	5	18	Nil	
Buenos Ayres & Pacific	2,807	21.11.42	99,180	+	17,280	21	1,814,820	1,622,100	+	192,770	Ord. Stk.	7½	11	52	Nil	
Buenos Ayres Great Southern	5,080	21.11.42	167,120	+	20,100	21	2,854,140	2,666,760	+	187,180	Ord. Stk.	10½	31	92	Nil	
Buenos Ayres Western	1,930	21.11.42	62,420	+	14,494	21	1,052,063	1,038,180	+	23,880	"	9	21	103	Nil	
Central Argentine Do.	3,700	21.11.42	134,654	+	38,472	21	2,564,571	2,282,214	+	282,357	Dfd.	8½	2½	6½	Nil	
Cent. Uruguay of M. Video	972	21.11.42	24,675	+	942	21	450,805	472,068	-	21,263	Ord. Stk.	9½	1	5½	Nil	
Costa Rica	262	Oct., 1942	13,131	-	9,031	13	51,375	91,158	-	39,783	Stk.	15½	11½	14	Nil	
Dorada	70	Oct., 1942	19,470	+	9,250	44	157,175	124,970	+	34,205	1 Mt. Db.	97	97	88½	6½	
Entre Rios	808	21.11.42	18,348	+	4,194	21	383,988	359,100	+	24,888	Ord. Stk.	4	1	7	Nil	
Great Western of Brazil	1,030	21.11.42	19,200	+	3,000	47	52,600	461,400	+	67,200	Ord. Sh.	11½	1½	26	Nil	
International of C.I. Amer.	794	Oct., 1942	£ 49,491	-	£ 80,010	42	85,072,794	£ 84,666,581	+	£ 406,213	1st Pref. 5 p.c. Deb.	6d.	2	Nil		
Interoceanic of Mexico	223	Oct., 1942	8,570	+	1,125	44	71,925	65,445	+	6,480	Ord. Stk.	9½	1	5½	Nil	
Le Guairá & Caracas	1,918	14.11.42	30,288	+	3,259	20	1,390,255	1,209,568	+	18,687	5 p.c. Deb.	4	4	5½	Nil	
Leopoldina	483	21.11.42	26,000	-	1,500	21	5,813,900	6,171,300	+	357,400	Ord. Stk.	4	4	4½	Nil	
Mexican	319	Sept., 1942	11,895	-	1,899	9	35,002	41,274	-	6,172	"	4	4	4½	Nil	
Midland of Uruguay	382	15.11.42	8,049	+	2,096	30	172,058	128,796	+	43,262	Ord. Sh.	66½	11½	73/9	34	
Paraguay Central	274	20.11.42	83,400,000	£ 1,486,000	200	21	£ 76,788,000	£ 71,834,000	+	£ 4,954,000	Pr. Lt. Stk.	43	29	51½	11½	
Peru & Corp.	1,059	Oct., 1942	85,746	+	14,153	18	336,988	292,346	+	44,642	Pref.	6½	1½	14½	Nil	
Salvador	100	Sept., 1942	£ 55,000	+	£ 10,000	14	£ 183,000	£ 156,172	+	£ 156,172	"	6½	1½	14½	Nil	
San Paulo	153	15.11.42	38,252	+	7,764	47	1,695,626	1,680,584	+	15,042	Ord. Stk.	52	24½	58	3½	
Tatral	160	Oct., 1942	3,180	+	2,440	17	19,810	21,990	+	2,150	Ord. Sh.	1	6½	2	Nil	
United of Havana	1,346	21.11.42	45,226	+	26,572	21	844,294	396,108	+	448,185	Ord. Stk.	2½	8	7	Nil	
Uruguay Northern	73	Sept., 1942	1,059	-	180	14	3,257	3,919	+	672	"	6½	6½	7	Nil	
Canada	Canadian Pacific	17,039	21.11.42	1,052,600	+	84,000	47	45,030,600	38,878,800	+	6,151,800	Ord. Stk.	13½	7½	15	Nil
India	Barsi Light	202	Oct., 1942	13,747	-	255	30	105,747	101,002	+	5,745	"	5	5	5	5
Bengal & North Western	2,090	Oct., 1942	184,425	-	78,594	4	184,45	263,019	+	78,594	Ord. Stk.	345	253	360½	5	
Bengal-Nagpur	3,267	21.6.42	284,100	+	31,301	11	2,271,325	2,107,876	+	163,649	"	101	95½	99	4	
Madras & Southern Mahratta	2,939	31.7.42	341,615	+	133,549	18	2,714,939	2,473,086	+	241,853	"	105½	101½	104	7½	
Rohilkund & Kumaon	571	Oct., 1942	60,375	+	10,969	4	50,375	49,405	+	10,969	"	342	290	358½	4½	
South Indian	2,402	20.6.42	179,171	+	43,616	12	1,376,295	1,113,057	+	263,238	"	100	87	101	4½	
Various	Beira	204	Aug., 1942	82,089	-	48	825,692	101,002	+	5,745	Pref. Sh.	1½	29	37	Nil	
Egyptian Delta	607	I.J.10.42	13,489	+	2,472	30	211,096	144,860	+	66,236	B. Deb.	68	45	37	9½	
Marta											Inc. Deb.	90½	86½	92½	6	
Midland of W. Australia	277	Sep., 1942	27,713	-	7,393	9	84,321	58,977	+	25,344	"	—	—	—	—	
Nigerian	1,900	25.7.42	70,391	+	19,240	18	924,271	910,397	+	13,914	"	—	—	—	—	
Rhodesia	2,442	Aug., 1942	540,350	-	48	5,371,799	—	—	—	—	"	—	—	—	—	
South Africa	13,291	26.9.42	827,897	+	39,175	28	20,143,538	19,236,708	+	903,830	"	—	—	—	—	
Victoria	4,774	June, 1942	1,410,451	+	945,742	—	—	—	—	—	"	—	—	—	—	

Note. Yields are based on the approximate current prices and are within a fraction of 1%.

† Receipts are calculated @ 1s. 6d. to the rupee.

Argentine traffics are given in sterling calculated @ 16½ pesos to the £

§ ex dividend